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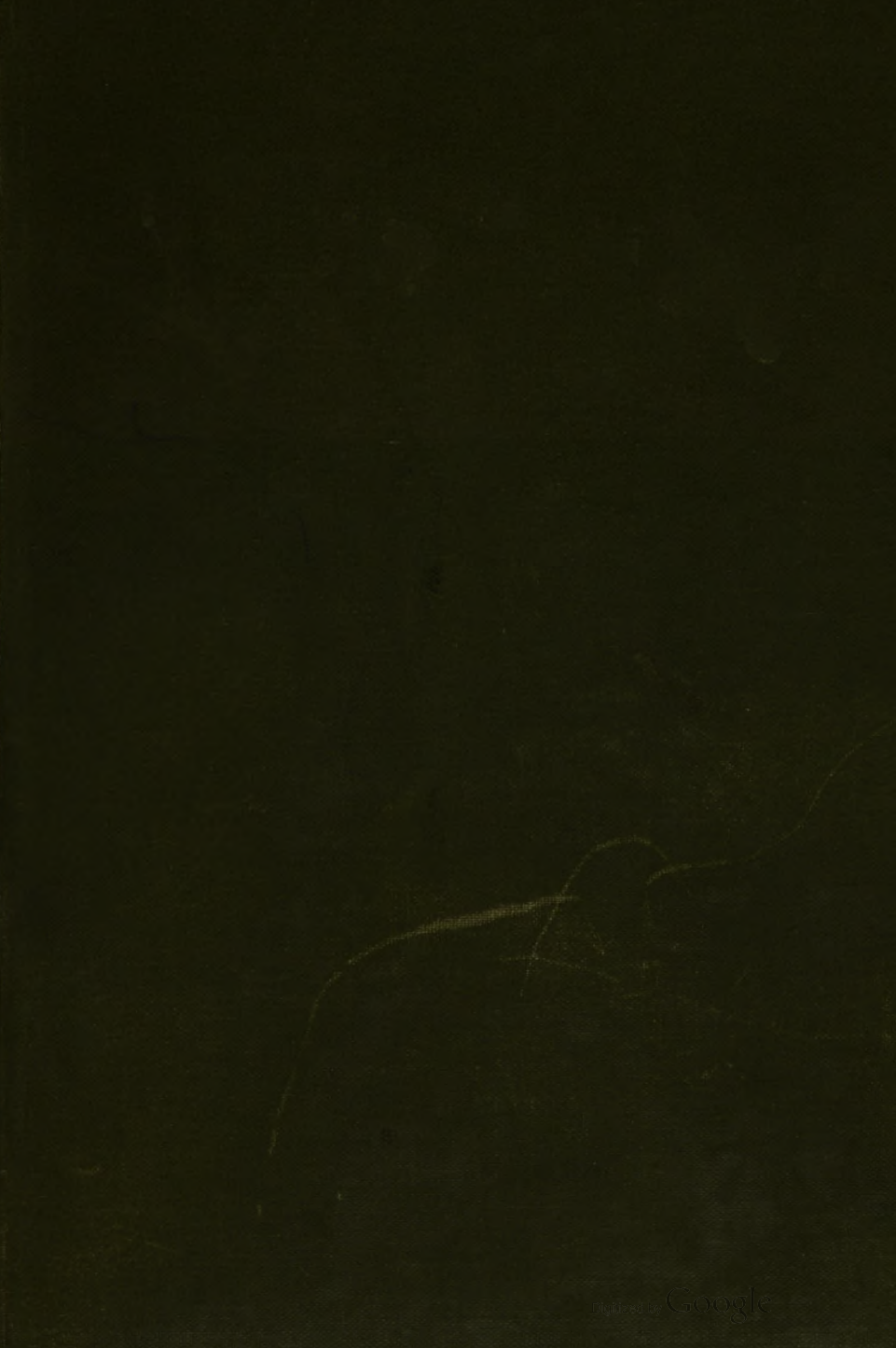
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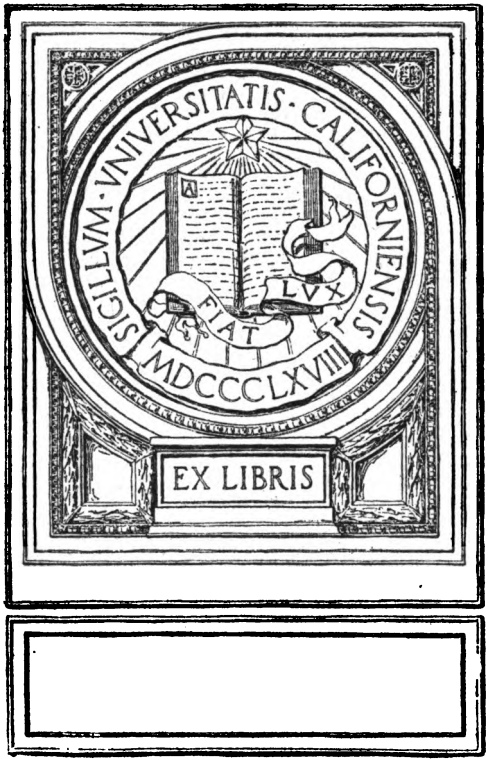
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EDUCATIONAL VALUES & METHODS

BASED ON

THE PRINCIPLES OF THE TRAINING PROCESS

BY

W. G. SLEIGHT, M.A., D.LIT.

LECTURER ON EDUCATION UNDER THE LONDON COUNTY COUNCIL

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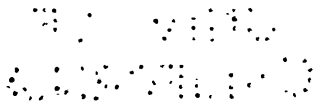

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PREFACE

After some trepidation, I accepted the author's kind invitation to write a preface, mainly because I wished to testify to his mode of procedure. In generally directing the experimental investigation which forms his starting-point, I had learnt that all his words may be confidently accepted by the reader as having been thrice well weighed, once at the bar of scientific pedagogy and psychology, once at that of sound common sense, and once in the light of personal practical experience.

The value of this trustworthiness is in proportion to the magnitude of the undertaking. The great assumption upon which education has rested for so many centuries is now at last rendered amenable to experimental corroboration—and it proves to be false! To the demolition of the ancient idol no one has contributed more powerfully than Dr. Sleight; his above-mentioned experiments, involving very great labour for many years, were characterized by a perfection of technique that extorted admiration even from those investigators whose previous methods and results he was showing to be faulty.

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In the present book, he is following up this work of destruction by the still more difficult one of reconstruction. Out of the ashes of the old pedagogic systems, he is conjuring up a new and more hopeful one. In place of the existing school curriculum, based largely on illusion and mere historical accident, he proposes to us an education in which every detail rests on rational grounds.

The prospect depicted by him is fair, indeed. He portrays happy, healthy, graceful children, living out their own lives, and yet preparing well for their duties as adult citizens of the state; the utmost skill is being developed for the coming hours of labour, the fullest culture for those of leisure, and high ideals for all times.

Another Utopia, the sceptic will say, not unnaturally. And, certainly, to hope for an immediate millennium would be idle enough. The conquests of science are not made by storm, but by slow sap. Dr. Sleight's scheme is not the final word on the subject—he would be the last to claim it; his proposed curriculum is no irrevocable code, but a precious preliminary suggestion. His main principle, indeed, is fixed in the bedrock of accurate psychological experiment. But the farther he pushes afield, the more his conclusions must acquire a speculative character, needing careful tentative application and much further experimental corro-

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boration. He is the pioneer breaking a new path. But we shall have to follow and support him in our thousands, if this path is to be converted into a high road. Also, a voice must be allowed to further considerations over and above pedagogical and psychological. In particular, the author seems to me to under-estimate the influence of political economy.

For the moment, however, far more urgent than these scientific obstacles looming ahead is the immediate *difficulty of obtaining a fair hearing*. Great changes in the present educational system must inevitably involve great disturbances to many of the present teachers. When it becomes advisable that old branches of instruction should give way to new, how shall this be demonstrated to those for whom the old branches mean livelihood? Can they be expected to stand so far above all other classes of humanity, that they will connive at their own execution? We must anticipate, rather, all the bitter and desperate struggle that invariably accompanies grave menace to vested interests.

But if the verdict cannot safely be left to the teachers who stand to lose so much, it must equally be withheld from those who stand to make a corresponding gain and, moreover, are apt to be blinded by reforming enthusiasm. The ultimate decision—and the care that, while the nation is not allowed to stagnate, the

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wind shall be duly tempered to the victims of obsolescent institutions—must rest with those teachers and others whose own interests are not concerned either way, and yet whose acquaintance with pedagogy and psychology are adequate for judging the available evidence. And it is to these that I most heartily commend a diligent study of the present volume.

C. SPEARMAN,

Grote Professor, Director of the Psychological Laboratory, University of London, University College.

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CONTENTS

PAGE

CHAPTER I

THE NATURE OF THE PROBLEM 1

CHAPTER II

REVIEW OF EXPERIMENTS (I) 18

CHAPTER III

REVIEW OF EXPERIMENTS (II) 57

CHAPTER IV

THE THEORY OF THE COMMON ELEMENT . . 75

CHAPTER V

THE THEORY OF CONCEPTS OF METHOD AND IDEALS 91

CHAPTER VI

PRINCIPLES GOVERNING THE SELECTION OF MATERIAL —CONSTRUCTIVE 129

CHAPTER VII

PRINCIPLES GOVERNING THE SELECTION OF MATERIAL —CRITICAL 165

CHAPTER VIII

THE CURRICULUM—WORK 194

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PAGE

CHAPTER IX

THE CURRICULUM—LEISURE 228

CHAPTER X

MODIFICATIONS OF THE CURRICULUM . . . 256

CHAPTER XI

FUNDAMENTALS OF MATTER—ENGLISH . . . 299

CHAPTER XII

FUNDAMENTALS OF METHOD—NATURE-STUDY . 338

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CHAPTER I

THE NATURE OF THE PROBLEM

It is to be hoped that the world is not so ignorant of what is meant by 'formal discipline' as the training-college student who explained it as 'form chastisement, or corporal punishment of a peculiarly ignoble type'. But the subject has not, at any rate in this country, received the attention it deserves. Stated simply, the theory known as 'formal discipline' declares that mental power, however gained, is applicable to any department of human activity;[1] or that mental power gained through the mastery of one subject is usable in any other. That, for example, the power of reasoning developed by continuous practice at chess will function equally well in all other matters requiring the use of reason—in mathematics, politics, or philosophy; that a memory for figures, developed and strengthened by years of business practice, will function equally well in the unlikely case of such a person devoting himself to the memorizing of sublime verse.

The mind of the man in the street would exhibit on this topic a most distressing confusion of ideas, if only what has been aptly termed 'confrontation'[2]

[1] See Baldwin's *Dictionary of Philosophy and Psychology*: De Garmo upon 'Formal Culture'.

[2] Professor Adams, *Exposition and Illustration*, pp. 78–80.

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of contradictory ideas could take place. Happily for his peace of mind, the man in the street hardly ever passes through this experience; by his power to retain ideas in an unrelated state, to allow only one idea to come into the focus of consciousness at one time, and to let it fall into obliviscence immediately and entirely upon the appearance of its contradictory, he can go on his way with his mental serenity undisturbed. Not that he has never given the subject any thought; indeed, he has developed two contrary views into two contrary philosophies of life, which he is accustomed to apply arbitrarily to its problems as they arise. He sees unmoved the highest functions of the State undertaken in rotatory fashion—training undergone as Minister of Education qualifying for chief command at the Board of Admiralty, and vice versa. He has seen, and until recently acquiesced in, the official assumption that the training received at one of the older universities produces a mind, not necessarily stored with wisdom, but with all its faculties—reason, memory, judgement, and even observation—so tempered and on the spring, that they can be successfully applied to any domain of knowledge or activity, from the government of smaller or larger sections of humanity to the humbler one of guiding and assessing the work of experienced teachers. In a series of interesting stories of the 'brilliant detective' type, a recent writer[1] has very successfully played upon the same popular belief, and represented a professor as able to

[1] Jacques Futrelle, *The Professor on the Case.*

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unravel the most involved tangles of criminality in many varied conditions of life, simply as the result of a one-sided training of the faculty of reasoning—that of mathematics. This kind of assumption the ordinary person can make and use for explanatory purposes, and without any difficulty interpret other and partially similar facts by the opposite and contrary hypothesis. He would certainly call in question the sanity of the Ministry which would transfer the most gifted of chess players to the head of the army in time of war. He discriminates with considerable acumen between the genius and inspiration of a poet's verse and the mediocrity of his prose. He would regard you as mentally unsound, or jesting, if you should suggest that the work of a cobbler was good training for carpentering or tailoring. Most of us would admit that a bad Latinist may make a very able electrical engineer, and that a thorough course in training of the judgement by means of the logic manuals may not help in forming a correct judgement in choosing a wife. Every normal teacher has discovered in his class children who reason well in arithmetic and seem stupid in prose analysis; others who observe flora but not fauna, letters but not figures; others who remember easily all the most recent cricket scores, but forget equally easily how many pounds there are to the ton.

We thus find that the popular view fluctuates between two opposites. Sometimes 'common sense' assures us that a special and one-sided training has

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far-reaching effects in developing judgement, observation, and other 'faculties'; sometimes the same guide assures us just as positively that the effects of such training are limited to the area in which the training took place. We must, therefore, not place too much reliance upon 'common sense'. It is valuable, but not reliable; easy of application, but often inaccurate.

The belief in the general effects of special training may in part be due to patently illogical reasoning. For example, experience teaches that many lawyers possess acute minds; they tackle a great variety of problems with remarkable facility; the illogical inference consists in assuming that this is due to their training as law students. That some of our greatest scientific geniuses and practical administrators have received their education at one of the two great universities is also a fact; but that the special classical training received there was the foundation of their power is an inference, and one which it is essential to demonstrate before accepting. Whatever, then, may be the truth of this important problem, it is clear that there is a problem.

The man in the street is not yet aware of this fact, and it is certainly true that a large number of English teachers are in the same unfortunate position. What is more surprising still, recent books written by educational experts, and containing extremely valuable pedagogical work, show profound ignorance upon the whole matter, and even unawareness of the existence of the problem.

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One author says: 'The dead languages must afford the best training for the memory, since their association with the environment of the pupil is more remote than is the case with modern languages, especially the vernacular, and their study makes a greater demand upon the voluntary effort to recall. And so also, as the subject-matter dealt with is more remote than that of most modern writings, greater play is given to the imagination in picturing the scenes described in the former case. . . . The very struggle with the difficulties of construction of a Latin sentence is a training of the boy's perseverance and determination, and those who resist the temptation to use illicit assistance in their difficulties also come out of the struggle with their moral character strengthened.' [1]

The same writers, in describing the disciplinary value of geography, claim that 'it affords a splendid training for the memory, which has to be exercised in the recall of facts imparted'. 'It is also', we are told, 'a first-rate instrument for training the reasoning powers.[2] . . . Mathematics itself makes practically no call on the powers of observation.' [3]

The same apparent ignorance of the problem is shown in another *Primer of School Method*. The authors frequently make use of language which indicates that they still retain the conceptions of a 'faculty psychology'. Writing is said to train both attention

[1] Collar and Crook, *School Management and Methods of Instruction* (Macmillan & Co., 1902), pp. 133–4.

[2] Ibid., p. 194.

[3] Ibid., p. 215.

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and memory, and 'the judgement is cultivated by the study of form, spacing, and proportion, and by that process of analysing letters which the art of writing involves'.[1]

With reference to mathematical training we are told that 'In our schools arithmetic should be taught both as an art and as a science: as a science, on account of its practical utility, and as an art on account of its value as a means of mental training'.[2] And again, 'The memory is largely exercised by the study of history, the learning of dates being a special example.'[3]

Mr. Barnett's well-known compilation upon *Teaching and Organization* is, in spite of the distinguished men who contributed to it, unfortunate in this important matter. Putting upon one side the frequently illegitimate use of the word 'faculty', we find several contributors apparently unaware that the old conception of 'mental discipline' has undergone any modifications. Dr. Wormell, in his article upon 'Mathematics', tells us that 'it has been generally admitted that the study of mathematics is invaluable—first, because of the habits of mind that it forms; secondly, *because of the discipline of faculties that it affords*; and thirdly, the study is a necessity because of the utility of its facts and processes in business of all kinds'.[4] It is,

[1] Dexter and Garlick, *A Primer of School Method* (Longmans & Co.), pp. 70–1.

[2] Ibid., p. 88.

[3] Ibid., p. 198.

[4] P. A. Barnett, *Teaching and Organization*, p. 78.

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however, just this general admission of which he speaks that is being questioned.

In the article upon ' Classical Teaching ', by a former Head Master of Haileybury, we find similar ideas, more strongly and crudely expressed. Thus : ' Putting it quite briefly, the learning of these ancient languages in its earlier stages affords an opportunity for training in precision of thought, memory, inference, and accuracy ; in its later stages it is capable of enriching the mind with noble ideas. . . . This characteristic, combined with others more generally recognized, has enabled the study of Latin to survive the heavy assaults of the last half-century. People go on defending it as though it could turn business men into *littérateurs* ; it can do, and has done, nothing of the kind, but it is an unrivalled instrument for *stimulating the reasoning faculties at an age in which their very existence might almost seem open to doubt*. . . . If, however, there be a peculiarly efficacious power in these languages to strengthen the reasoning faculties and to impart a sense of meaning as distinguished from a linguistic knack, then it is undeniable that the best methods possible are those which bring this power of Latin and Greek into play upon the young student's mind, *no matter how long or how short be the time at his command. They are for all boys a gymnastic of the very best kind*, and for the select minority they are a great deal more.' [1]

The words italicized indicate the extreme position

[1] Ibid., pp. 214–5.

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here taken up, viz. that certain formal matter affords an unrivalled gymnastic or mental discipline.

A late Head Master of Clifton College, speaking upon 'specialization', sums up as follows: 'We may arrange these results in another way, so as to show the faculties which are chiefly affected by each of the subjects:

Greek and Latin (Elementary)	Memory, logical expression, concrete reasoning.
Greek and Latin (Higher)	Taste, imagination, expression, and social reasoning.
Modern Languages	Offer the same kind of training as Greek and Latin, but in a vastly inferior degree.
English Literature	Memory, taste, imagination, expression, social reasoning.
History	Memory, imagination, social reasoning.
Mathematics	Abstract and concrete reasoning.
Physical Science (if combined with laboratory work)	Observation and concrete reasoning.'[1]

It seems fairly evident from the above quotations that these writers still feel the same confidence in the theory of 'formal training' which doubtless animated the breasts of the 'faculty' psychologists; and their ignorance of the problem has become through them the heritage of many teachers, whose views upon educational theory and practice have been thereby considerably prejudiced.

When a new conception of some great question arises, wonder is generally felt that it could so long have remained hidden. In the light of a new conception, the facts which it illuminates seem too obvious

[1] P. A. Barnett, *Teaching and Organization*, p. 334.

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to have escaped notice. How could any one have doubted, for example, that it was the earth which went round the sun? In the same way, although observation and investigation have not yet completely cleared up the whole mystery of the training process, yet the extreme view until lately held with regard to formal training has been 'scotched' as completely as the Ptolemaic system of astronomy. What, then, leads so many still to place confidence in the theory we are dealing with or in any modification of it?

We must admit that it is in part because the latest developments of the theory show that, even in some of its extremer forms, it contains a grain of truth. Teachers all aim practically at the same mark. We endeavour to prepare our pupils to perform the varied tasks of life well and faithfully. Our different principles have produced, or rather have seemed to produce, identical results. Different curricula have had something to do with inculcating similar qualities. But all these varied principles, methods, and curricula have elements in common, which have contributed to form character and ability, so that every teacher can claim that his particular principles or methods have been instrumental in achieving those results. Who can penetrate the obscurity and indicate the real cause or causes which lie hidden among much conflicting theory and practice?

Then, again, professional pride has protested against any depreciation of traditional procedure. Certain

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educational theories have magnified the teacher's office until they have seemed to make him a veritable pope. It is easy to argue, for example, from some presentations of Herbartianism that the teacher is able to mould the child's mind as easily as the gardener bends the branches of his fruit-trees in any direction. If the *content* of a mind be considered, in isolation from its capacities, it is, one may argue, what the teacher has willed it should be. This is both true and untrue; at any rate, it is one ground of the professional pride of the teacher, wherever that is to be found. Moreover, will any teacher own that he has been teaching on the wrong lines? Shall he confess that he, too, was taught many a useless item of knowledge, and passed it on to his unfortunate pupils? He was crammed with rules of grammar, and shall not his pupils eat the same sour grapes? He is what he is, so it appears to him, through studying the classics; can he be improved upon? If he escapes such vanity, at any rate he possesses certain lofty ideals which he feels it is all-important he shall transmit to other generations—and naturally always by the same means. The idea of choosing certain subject-matter for formal training purposes—the belief in formal training, in fact—has stood many a rude assault, and undoubtedly still finds in the conservatism and *amour propre* of men sturdy, although clumsy, weapons of defence.

Those who gave the matter even superficial thought were confirmed in their belief by a false analogy. The

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axe can be sharpened upon any sufficiently hard surface, and its sharpness can then be turned upon any material. A machine may, when properly constructed, indiscriminately crush anything put into it. A certain muscular development is capable of use in manifold directions. In the same way the various 'faculties', such as perception and judgement, were conceived as receiving training by means of one kind of practice, and as being then adaptable to all tasks which involved their use. The analogy is not only rough, it is false and misleading. The axe and the wood it cuts continue throughout to retain their separate natures; they remain two distinct things; the machine also, and to a lesser degree muscle and the object upon which it is used. But mind and mind-material have a very different relation. They do not retain their distinct natures; 'in a vital adjustment there is always a unity; the mind is fed by the problem it solves, and turns with relish to similar problems. To each distinct situation the reactions of mind and brain are unique.'[1]

What support of a more logical kind is to be found for this notion? One of the most natural processes of the human mind consists in the act of hypostasis—that is, the act of attributing substance to what is unsubstantial, of transforming a process into an agent. Something of the same kind has always been natural to mankind. In primitive times, the phenomena of nature were made substantial and personified. In

[1] Horne, *The Psychological Principles of Education*, p. 68.

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more recent times, in the study of mental life, many processes were recognized as of similar nature, as, for example, when different acts of recollection were observed to be similar in kind, or when a person reasoned his way to a mathematical, or a political, or a domestic conclusion. The fact that all such processes of remembering or reasoning had similar elements led the 'faculty psychologists' of the eighteenth and nineteenth centuries to regard them as the functions of what they called 'faculties' of memory and reason. The step from this conception to that of formal discipline was a simple one. When a faculty came to be thought of as what phrenologists call a 'bump', it was naturally held possible to develop it upon any material which involved the use of the faculty. The notion arose very naturally, therefore, that any kind of memory practice would train the 'faculty of memory', so that that power would show a general improvement in memorizing any matter whatever. And so for all the well-known phases of mental life. From such assumptions it was inferred that mathematics could give little help in training 'the power of observation', or botany in training 'the reason'; but for acquiring 'accuracy' or 'reasoning power' the study of mathematics was held to be invaluable, and for 'observation' botany was considered indispensable. To-day, however, 'functional psychology, affirming that mind is developed through adjustment to given situations, knows nothing of a mental power thoroughly detachable from the

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place of its origin, and perfectly applicable to a different set of conditions '.[1]

Even when this 'faculty' view of the nature of the human mind met with some amount of contradiction from the world of fact, and even after 'faculty psychology' had passed into the limbo of effete theories, there was still much to give colour to the practice which had arisen as a consequence of that view. In fact we are suffering as inheritors of this discredited psychology. While the theory has passed away, the teaching world has continued to base its methods upon it, and to seek out its remoter applications.

In recent years, experimental psychology, which has done so much to counteract the error of *a priori* reasoning, has contributed its quota to give confidence to the friends of formal training. One of the best-known investigations into this subject, that by Professor Meumann, resulted not merely in lending support to the theory, but in a recommendation to employ in the school formal memory work, such as the memorizing of nonsense syllables, in order to give general memory training. Other experimenters have come very near to the same result. In the course of our inquiry we shall examine these experiments, and, we believe, prove either that the conditions under which the investigations were carried on were not strictly scientific, or that the inferences from correctly gained results were incorrectly drawn. Whatever may be the result of our examination, the effect of many

[1] Horne, *The Psychological Principles of Education*, p. 68.

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of these researches has been to lend plausibility to the theory of formal training and to harden the hearts of those who base their teaching methods upon it.

Many instances drawn from common observation appear also to the lay mind to support the theory. A few have already been cited. From experience with classes of children we sometimes find that the pupil who shows himself able to cope with the sequences of mathematics shows similar power when employing what appears to be the same reasoning power in other directions. The boy who has an excellent memory for dates often shows a similar capacity when dealing with formulae or vocabularies. It might, therefore, look as if there were a power or faculty which functioned irrespectively of the material upon which it was exercised. But the mere fact that many instances to the contrary occur should make one hesitate to accept such a generalization. In school life we are constantly meeting cases where the reverse is true. Pupils who observe the details of maps with great exactitude show very little aptitude in noting the minutiae of natural objects; others can remember names of places but not arithmetical tables. We have come across children who draw well and write badly; who are neat in writing and drawing, and untidy in needlework; are obedient to the teacher, and truculently disobedient to parents. It is essential, therefore, not to place any confidence in either set of contradictory instances; it is evident that there are hidden factors which only careful experiment and inference can bring

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to light. To base a generalization either way upon such facts is opposed to all sane thought; and to apply a generalization of this kind in such a way as to make it effective in our school work, is still more absurd.

The educational system out of which the doctrine of formal discipline developed arose in the Middle Ages, at a time when the content of human knowledge was comparatively small, and at the end of a long period during which this content had undergone scarcely any increase. In this limited sense, the world had stood still for centuries; the processes of deduction had almost completely usurped those of observation and induction, and as a result the schools spent nearly the whole of their energies in seeking to develop the reasoning powers by means of deductive training of a very one-sided kind. At this time, too, for many historical reasons, Latin was the most useful branch of study; it was the chief means of communication between the learned of every civilized country, and it was also the language of literature and of books of almost every kind. For practical reasons, then, this study was pre-eminent; whatever training was to be given had to be derived from it. For many years Latin touched life in many and varied directions, and rightly asserted its claim to an important place in the curriculum. But in the course of time the grounds of its practical value very largely disappeared, and the tremendous growth in the content of knowledge—knowledge of men, of books, and above all of

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Nature—called for the consideration of the schools. The pedagogue had then to choose whether he would continue to teach material that had lost its living qualities, or would open the school to the new knowledge and influences then making themselves felt on every hand. He chose the easier plan; floating has always been less laborious than swimming. Gradually the doctrine of formal discipline took shape in his mind, and was found to be a convenient weapon of defence. Then 'faculty psychology' at last became a definite system of thought, and the confirmation it gave to his ideas upon training brought joy to many a toil-worn classical teacher.

We are no longer in the position of having but few facts to teach. Instead, we are bewildered by their multiplicity and complexity. It would, therefore, be a great source of solace if we could hope to train our pupils to observe, reason, and remember by means of a suitable and circumscribed choice of material. It has been thought at various times that this is actually the case—that the classics, or science, or mathematics would separately do all this. No longer, however, does faith in formal discipline go so far as to apply this view strictly. There is no characteristic of modern education more marked than the steadily growing complexity of curricula. In practice we seem to be determined to train in many directions; in theory, numbers still hold to the old and hopeless formula, with many of its evil implications and applications.

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It is not to be imagined that the problem can be solved in any cut-and-dried fashion. The historic theory of formal discipline has undergone so many modifications that the issue is by no means so clear as an introduction to the subject would make it appear. Above all, it has entered into our practice in so many insidious forms, that even if an analysis of the principle should be perfectly clear to the comprehension of all—even if the various forms in which the principle has been stated were clearly understood and their varying degrees of accuracy irrefutably exposed—there would still remain the inevitable and thankless task of eradicating its myriad applications to the practice of teaching.

It will therefore be the endeavour of the writer to present the problem in its newer form, to describe in what way and in how far its solution has been reached, and to indicate briefly how that solution may be applied to practice.

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CHAPTER II

REVIEW OF EXPERIMENTS (I)

THE erroneous opinions upon the question of formal training which we have quoted were partly the result of pure *a priori* reasoning, and partly the outcome of a certain amount of observation and insecure inferences. Unfortunately, some of them owe their existence to scientific experiment. It is only very recently, however, that they have been subjected to the more accurate methods of investigation. To Professor Meumann, who was at the time head of the Psychological Laboratory at Zürich, and to Professor Thorndike of Columbia University, belongs the chief honour of dealing with the problem on the lines of scientific experimentation. The objects of the experiments were to ascertain whether there is any truth in the extreme view that practice in a particular mental operation brings about improvement in *all* other mental operations usually called by the same name, such as observation or memory; or whether the effects of such a one-sided training extend at all beyond the medium of training or practice.

In the present chapter a brief account of the chief experimental work will be given. Simple mention of many of these researches will be all that space permits; the most important and the most recent will, however, be described in some detail, and some critical analysis undertaken of their procedure and inferences.

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One of the earliest experiments was conducted by the American psychologist Davis,[1] who sought to ascertain whether the development through training of one side of the body produced or was accompanied by any development *of the other side*. In one series of experiments he found that practice in raising a weight to the shoulder by means of the forearm increased not only the girth of the arm so trained, but also that of the arm unexercised. In another series, the accuracy achieved in lunging with a foil with the right hand was transferred in part to the left and unpractised hand. Similar tests showed him that practice in using the dynamometer[2] with the right hand had the effect of producing better results with the left hand, and exercise with the ergograph[3] gave not very different results. From the first series of experiments the writer ventured to infer that 'will-power and attention are educated by physical training. When developed by any special act they are developed for all other acts'.[4] After the second series of experiments, however, a less certain tone prevails. We are then told that when volition or will-power is 'developed for one act it is efficacious for similar acts done by

[1] Davis, *Researches in Cross Education* (Yale Psychology Studies, 1898).

[2] An instrument for measuring muscular force.

[3] 'An instrument for measuring the mechanical work of the muscles and the changes which, as the effect of fatigue, may be produced during the work of the muscles' (see Mosso, *Fatigue*, translation by Drummond, p. 83. Swan and Sonnenschein).

[4] Davis, *Researches in Cross Education*.

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symmetrical or closely related muscles: *in a lesser degree it is possibly developed for all acts*'.

In Scripture's Laboratory, Smith and Brown[1] arranged an interesting series of tests to ascertain whether *accuracy*, trained by practice with one hand, was transferred to the other. The accuracy of the observer's *left* hand was first tested by recording the results of repeated attempts to insert a needle in a small hole; fifty per cent. of these attempts were successful. The *right* hand was then practised for a considerable time, and it was afterwards found that the accuracy of the *left* hand had improved, reaching a percentage of successful shots of 76. Smith obtained similar results in practice with the dynamometer, and attributed this improvement to a training of attention.

Coover and Angell[2] attempted to discover whether an increased power in discrimination of *sound* intensities was transferred to *visual* discrimination; that is to say, whether practice in gauging sounds as louder or softer than preceding sounds brought about any increased power in deciding whether particular colour shades were more or less intense than others. Since this piece of research work is well known and often quoted, we will spend some moments in examining it.

Four persons were trained in discrimination of sound

[1] Scripture, Smith, and Brown, *On the Education of Muscular Control and Power* (Studies from the Yale Psychological Laboratory, 1894, ii. 114–24).

[2] J. E. Coover and F. Angell, 'General Practice Effect of Special Exercise,' *American Journal of Psychology*, 1907, pp. 328–40.

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for seventeen days. Before and after this practice they were tested in discrimination of shades of grey. Three other persons were tested in exactly the same way, but received no training in discrimination of sounds. The effects of the practice received by the four were measured by comparing their test results with those of the three who had no training.

The 'practice' consisted of forty judgements as to sound intensities on each of the seventeen days—in all 680. The person practising listened to a sound pendulum and had to judge after a short interval whether a given tone was louder or softer than or similar to the preceding tone.

Three out of the four practised persons show an increase in correct and a diminution in undecided judgements; all three unpractised persons show a loss in the second series of tests. Summarized, the figures given are as follows:

Individuals practised.

	Mr. A.	*Mr. B.*	*Mr. C.*	*Mr. D.*
No. correct before training	60	46	47	46
No. correct after training	64	52	47	68

Individuals unpractised.

	Mr. E.	*Mr. F.*	*Mr. G.*
No. correct before interval	41	31	46
No. correct after interval	38	30	43

One feature of these figures tends to cast doubt upon the whole performance, and the authors neither offer any explanation of it nor speak of it as at all curious—the feature, namely, that there is an actual

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loss in the discriminative ability of all the untrained. But numberless experiments have taught us that practice in any particular activity improves the power in that activity; the practice tends to form a habit. It seems difficult to believe that three individuals, after seventy reactions, followed after repose by one hundred and five similar reactions, should show in these last a decrease in their power of discrimination. It is also a well-known fact that after an interval of rest from a particular exercise some performers show a very considerable and immediate improvement; and that, on the other hand, others take some little time to get back to their former skill. This explanation cannot serve here, however, as the results are equally taken from the *last* days' judgements. It is unfortunate that no light is thrown upon these unusual results.

The second set of experiments was as follows: Four persons were trained in sorting cards of six different and very distinct colours. In all, about 4,000 of these cards were distributed by each individual. Fifty cards were held in the left hand, the colour of the under side; the right hand was used to lift the card sufficiently to see the colour, the card then being placed in its appropriate cabinet, one of these being reserved for each colour. The training consisted in 15 exercises daily, and extended over a period of 40 days. Before the training, these persons were tested on six successive days in certain typewriter reactions, each performing about 3,000 reactions; after the training similar work

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was done for three days with an individual total of about 1,800 reactions. Stated briefly, the exercise consisted in tapping, directly a letter appeared through a screen, the corresponding key of the machine, the tap having the effect of bringing another letter into view. Four different letters were used, and the reaction time was recorded by means of a kymograph. Three other persons performed the typewriter exercises for three days before the interval and for two days after, receiving during the interval no training at all. The efficiency of both groups was estimated in two ways—by the reaction time and the percentage of errors. The figures are so interesting and suggestive that it is worth while reproducing them :

REAGENTS RECEIVING TRAINING

Before Training.

Day.	*Mr. A.*		*Mr. B.*		*Mr. C.*		*Mr. D.*	
	Sec.	*Errors.*	*Sec.*	*Errors.*	*Sec.*	*Errors.*	*Sec.*	*Errors.*
1st	71·0	2·0	94·0	0·0	73·0	3·0	99·5	5·0
2nd	76·0	0·9	93·0	4·0	76·0	3·0	87·3	3·0
3rd	73·5	1·1	80·0	3·0	71·2	3·5	84·0	4·5
4th	67·4	1·0	73·1	6·3	69·1	3·0	80·1	5·3
5th	69·0	1·0	72·2	4·5	69·1	5·0	77·9	4·3
6th	63·3	0·8	72·7	7·0	67·0	4·0		

After Training.

1st	63·1	1·0	65·2	8·0	66·4	4·5	70·7	8·0
2nd	61·3	1·0	62·9	11·0	62·1	4·5	69·0	3·3
3rd	60·4	1·0	61·0	13·0	61·7	5·4	66·3	6·0

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CONTROL REAGENTS (NO TRAINING)

Before Interval.

Day.	Mr. E.		Mr. F.		Mr. G.	
	Sec.	Errors.	Sec.	Errors.	Sec.	Errors.
1st	90·7	5·0	141·8	4·0	87·0	1·0
2nd	74·1	7·5	116·5	1·3		
3rd	74·0	6·3	96·1	1·5		
After Interval.						
1st	70·7	4·5	90·5	1·3	80·5	1·0
2nd	66·2	7·0	86·2	1·3		

The authors admit that the quantitative results seem to be ambiguous. The four trained persons exhibit, as we should expect, a decrease of reaction time, but, strangely enough, an *increase* in the number of errors. The three untrained persons improve also, by a diminution in reaction time, accompanied in their case by a *decrease* in the number of errors. It is difficult to see what principle of computation has been used in dealing with reaction time. For if we take (*a*) the results of the *last day* of the first series of tests and compare them with the results of the *first day* of the series after the practice, we obtain for the four practised subjects an average improvement of 5·2 per cent.; for the three unpractised an average of 5·9 per cent.

If, again, we compare (*b*) the results of the *last day* of the first series with those of the *last day* of the second period, we get for the four practised subjects an average gain of 8·8 per cent.; for the unpractised an average gain of 10·4 per cent.

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If we assume that these results are significant values, and not due to accident, we must indeed admit that the practice had an influence upon the test work, but in a negative direction—a fact which would completely destroy the worth of the testimony of the introspections. If it is assumed that the above figures are too small to have significance, then we must conclude that the training had no influence and that many of the introspective accounts are unreliable.

Curiously enough, the increase in errors is given as an indication of *improvement*. In the view of the experimenters it is an indication of some effect of the practice, and as the introspections all favour improvement, it is used to indicate improvement. The increase is attributed to the influence of rhythm, which incited reaction without cognition of the letter. 'As the reagents acquired more and more skill on the typewriter a strong tendency developed towards rhythmic series, reactions which resulted not in false nor mistaken reactions, but in mechanical reactions; that is, the rhythmic tendency was strong enough to overcome the voluntary effort towards a discriminative reaction. The effect of this power was to produce the confusion referred to above and in general to lengthen the total time for the series.'[1]

There seems to be some confusion here. If the main contention of 'transfer' of power from the sorting

[1] Coover and Angell, *American Journal of Psychology*, 1907, xviii. 328–40.

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of cards to the typewriter work is to be proved, the cause of the development of rhythm should be found in the practice exercises, and not in the tests themselves. If it is attributed to the test series, then the same rhythmic movement and corresponding increase of errors should appear in the case of the individuals who did *not* take the practice work. Briefly, then, it must be confessed that the increase of errors cannot be considered as indication of improvement.

The other evidence which the authors offer is that of introspection. The subjects speak of the gradual development of automatism. One naïvely says: 'no headache, no nausea as *before* card-sorting;' another that the 'general background of feeling is probably *not unlike* that of the card-sorting test, but I did not think of the card-sorting during the trial'; another says that it 'seems more automatic than ever before and even more so than the card-sorting'. 'It appears that the old associations have not only not been interfered with by forming new ones in card-sorting, but that they have become firmer, and action upon them more ready and automatic than it was before, or than it was in card-sorting.' The untrained subjects assert that some ease and facility were experienced in the period *before* the interval, but that the *after* test seemed unexpectedly 'difficult and unhandy'. The matter is thus summed up by the experimenters: 'Feelings of discomfort and difficulty following in the interval without practice of any kind emphasized the

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conclusions of the preceding paragraph, viz. that the training in card-sorting is the cause of the increased ease and facility experienced by the regular reagents in the second trial in typewriter reaction.' [1]

Now it is well known how exceedingly difficult it is to obtain thoughtful and generally unbiased introspection. The experiments described were carried on without any information being given to the subjects as to their daily progress; they had no objective proofs that they were improving. In so far, one would expect to obtain reliable introspection. But where these subjects, as in the present case, know not only the aim and object of the experiment, but also the theories of the experimenters upon the whole problem, it becomes extremely difficult for them to preserve an independent mind. A perusal of the above introspections might lead us to the conclusion that such was the case here. If these were answers to questions, then the questions must have been highly suggestive; and if they were spontaneous accounts without questions, their wording would seem to vindicate the theory of the unconscious influence of the experimenters' well-known views. Biervliet's objection to the employment by psychological experimenters of subjects trained in psychology and fully aware of the aims of the experiments and the general views held regarding the problem seems applicable here. More especially may this objection be urged here since the introspections as to

[1] Coover and Angell, *loc. cit.*

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the increased facility are contradicted by two facts, viz. (1) the average reaction time of the 'trained' was *longer* than that of the 'untrained', and (2) they made *more errors*.

In spite of these doubtful inferences the authors assume that transference is proved, and describe the causes of the alleged transference. Without going into these, one remark should perhaps be made upon the material used. The experimenters say that 'it is mere idle talk about *identical* motor elements'.[1] They assert that there are no movements common to the card-sorting and the typewriter reactions which might account for a spread of power. In the typewriter reactions the eyes, it is said, are fixed on the spot where the letter appears; 'in the card-sorting they rove about the compartments of the cabinet.'[2] It is, however, just here that one *may* perceive identical motor elements. Five minutes' practice in card-sorting would obviate the necessity for moving the eyes at all; the positions and colours of the compartments would be known, and the performer would be able to fix his eyes constantly upon the spot where the card colour would appear. The tendency to pronounce at first the name of the letter and the name of the colour is another common element; indeed, the necessary technique and method in both practice and test seem in certain points to be similar. There are

[1] Coover and Angell, *American Journal of Psychology*, 1907, xviii. 328–40.

[2] Ibid.

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probably also many common elements other than motor elements. Summarizing, then, we conclude (1) that transference is by no means proved, or (2) assuming transference, that its causes are not shown to be general.

Professor Judd performed several interesting experiments with a view to elucidating this problem. He described one of these as follows: 'The first experiment which I have to report is a very simple one. A person who was to be tested was seated in such a position that his right hand and arm were entirely hidden from view by a large screen. Whatever he did with his right hand, therefore, would be unseen by him. On the left side of the screen and in full view, nine different lines were shown in succession, and he was required to place a pencil held in the unseen right hand in the direction indicated by the several lines seen before him. The errors made in "placing" the pencil were accurately measured and recorded.'[1] The observer was next trained in giving the direction of one of these lines—No. 5. Then the original test was given again with the following results:

(*a*) Lines which before had shown an error in the same direction as No. 5 now improved with the latter. This is clearly a transference of the effects of practice and is spoken of as 'joint improvement'.

(*b*) Lines which before had shown an error in the

[1] Judd, 'Special Training and General Intelligence,' *Educational Review*, June 1908, pp. 36–7.

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opposite direction to that of No. 5 now grew worse. 'Reciprocal interference'—a species of transference—had taken place.

After these results had been obtained, practice was given with another of the nine lines (No. 2), but it was found that the previous training with line No. 5 had produced habits which interfered with the new practice to such an extent that although it was much greater in quantity and more radical in type, the reactor remained relatively unaffected. This was by the experimenter regarded as a third phase of transfer of practice effects.

There seems to be nothing in these results to favour the theory that the training gave rise to any *general power* or to any *general* development of certain psychical factors such as attention or imagination. The whole is explicable upon the assumption that the various operations possessed usable common elements which in some cases helped and in others impeded improvement.

In a short article entitled 'Practice and its Effects on the Perception of Illusions', the same writer described an experiment with himself and another as subjects, in which information as to the results of the training was constantly communicated to one, and withheld from the other observer. It was found that in both cases the illusion disappeared after some amount of practice. But in the second stage of the experiment, when the illusion-causing figures were reversed, the illusion, although at first as strong as

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ever, soon disappeared for the individual who had been told of his progress, but actually increased in strength for the other, whose progress had been hidden from him. We are told that in the first case the observer knew that his mode of interpretation must be readjusted. 'He had in addition to practice what we may call control of his acquired habit.'

The two pieces of experimental work just described are peculiarly interesting as showing the several ways in which different activities may be related by means of common elements. The possibility of 'transfer', in the form of 'joint improvement', has of course never been contested. Professor Judd has performed a service in showing that 'transfer' of practice effects may also take the form of interference. But it is the demonstration of the latter which brings out most clearly the fact that such transfer *only occurs where important common elements exist.* Further, where the observer is informed of his errors and successes as practice advances, he is quickly and naturally led to a generalization as to procedure, and the formation of what we may call a 'concept of method'. And this, as we shall attempt to show later, is a very different matter from formal discipline.

Many very interesting experiments have been performed for the purpose of ascertaining whether the effects of training in one kind of memory work are transferable; that is, whether by such practice the memory in its entire range is benefited—whether,

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in fact, we may speak of the formal training of *the* memory.

Professor James's attempt to arrive at a solution of this question is well known, and is inserted here on account of the historical interest it possesses as being an example of the method adopted in early experimentation, before the investigations of psychology had been subjected to the same rigorous procedure as those of the physical sciences. He says, 'During eight successive days I learned 158 lines of Victor Hugo's "Satyr". The total number of minutes required for this was $131\frac{5}{8}$; it should be said that I had learned nothing by heart for many years. I then, working for 20 odd minutes daily, learned the entire first book of *Paradise Lost*, occupying 38 days in the process. After this training I went back to Victor Hugo's poem and found that 158 additional lines (divided exactly as on the former occasion) took me $151\frac{1}{2}$ minutes. In other words, I committed my Victor Hugo to memory before the training at the rate of a line in 50 seconds, after the training at the rate of a line in 57 seconds, just the opposite result from that which the popular view would lead one to expect. But as I was perceptibly fagged with other work at the time of the second batch of Victor Hugo, I thought that might explain the retardation, so I persuaded several other persons to repeat the test.'[1] This was done with very similar results.

Now it is evident that the second 158 lines may or may not have been much more difficult of comprehen-

[1] James, *Principles of Psychology*, Part I, p. 667.

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sion or in construction than the first, and the fact of memory improvement through the intervening practice may thus be hidden. If they were of the same or less difficulty and no other disturbing conditions were present, then we have a really remarkable lack of transfer. Both test and practice material consisted of poetry; it might reasonably be supposed, therefore, that if ever there were a case in which transfer effects might follow, it would be here. So far as Professor James was able to discover there was no such result.

To solve the same problem, Professor Meumann arranged a series of experiments in which six adults submitted themselves to a number of memory tests covering a large field of material. There were three series of tests, each series consisting of twelve different tests. After the first test series a lengthy period was spent in practising the memory upon one type of material; then the second set of tests was given. This was followed by another period of practice, and this by the third test series. By this procedure the investigator hoped to ascertain whether one-sided training of the memory had any effect in increasing the power to memorize other and different material, and if so, under what conditions and to what extent.

The twelve tests of each series were of the following kinds:

I. Those in which only *one* presentation was given.

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(a) *Meaningless material.*

1. Letters.
2. Numbers.
3. Nonsense syllables.[1]

(b) *Material with meaning.*

4. Words (concrete and abstract nouns of one syllable).
5. German words with Italian equivalents in couples, the couples without logical connexion.
6. Verse.
7. Prose extracts.

II. Those in which several repetitions were allowed.

(a) *Meaningless material.*

8. Nonsense syllables.
9. Visual signs.[2]

(b) *Material with meaning.*

10. German and Italian words as before.
11. Verse.
12. Prose extracts.

In carrying out the tests in which one presentation only was allowed, or in other words, in which the tested person was allowed to read or hear the numbers, letters, or words once only, the following procedure was adopted. A constantly augmented number of items was presented and memorized until an error was made; at this point the number of correct items was

[1] Syllables artificially constructed and having no meaning, e.g. *som, bik, sep.*

[2] Such as ⅂, Γ, Π

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taken as the measure of the individual's immediate memory in this material. Thus in the 'letter' test:

1. B F Z M
2. L G K C X
3. N P S D J T
4. F X T W N K P
5. Z B S D V J F K . . .

and so on, until the first error was made; this point was called the 'error threshold'. After each period of training in nonsense syllables, a similar test was performed, and the percentage improvement calculated. This is shown in columns 1 and 3 of the upper part of the table given below.

In order to confirm the results calculated in this manner, the tests were not stopped at the point where the first error was made, but were continued until the errors made reached a total equal to one-third of the possible correct items. The number of correct items thus obtained was compared with the number similarly obtained after the period of training and the percentage improvement calculated. These results are shown in the second and fourth columns of the upper part of the table.

In carrying out the tests in which *several* repetitions were allowed, a different procedure was necessary. We will take as an example the test in memorizing lists of nonsense syllables. The number of readings necessary to the perfect reproduction of a list of twelve nonsense syllables was noted. After an interval

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sufficiently long to allow of almost complete 'forgetting', the test was repeated with the *same* list, and the number of readings noted which was this time necessary to perfect reproduction. After each period of training, similar tests were performed with lists of *other* nonsense syllables, and the percentage improvements calculated with regard to the number of repetitions needed both for a first learning and also for a second learning. The other tests were similarly treated. These percentages are shown in the lower half of the table.

Each practice took the form of memorizing four rows of twelve nonsense syllables each, daily, for eight days, altogether therefore thirty-two rows. Nonsense syllables were chosen as being the most mechanical material possible, and as being at the same time little related in form to the bulk of the subject-matter which formed the material of the tests.

At the conclusion of the experiment, a considerable and general improvement appeared in the results of the second series, and a still more considerable one in those of the third. Meumann therefore concludes that 'there are no doubt *related memory functions* which can be perfected upon *any material involving the use of memory*, the development taking place proportionately to the degree of relationship between the practice and the test material'.[1]

[1] Ebert und Meumann, 'Ueber einige Grundfragen der Psychologie der Uebungsphänomene im Bereiche des Gedächtnisses,' *Arch. f. ges. Psychol.*, 1904, iv. 1–232.

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The summarized results were as follows :

TESTS IN WHICH ONE PRESENTATION WAS ALLOWED

	Percentage Improvement of 2nd Series over 1st.		*Percentage Improvement of 3rd Series over 1st.*	
	Error Threshold.	*⅓ Errors.*	*Error Threshold.*	*⅓ Errors.*
Numbers	29	56	59	70
Letters	36	28	58	43
Nonsense syllables	20	49	42	59
One-syllable nouns	23	0	20	10
German and Italian words	10	53	30	67
Poetry	13	—	27	—
Prose	12	—	29	—

TESTS IN WHICH SEVERAL REPETITIONS WERE ALLOWED

	Percentage Improvement of 2nd Series over 1st.		*Percentage Improvement of 3rd Series over 1st.*	
	1st Learning.	*2nd Learning.*	*1st Learning.*	*2nd Learning.*
Nonsense syllables	61	45	77	59
Optical figures	42	48	76	56
German and Italian words	36	29	60	36
Poetry	21	45	38	50
Prose	43	67	65	70

The definite and decided nature of such results would appear to settle the problem, and indeed in favour of a *general* transference, of a *general* improvement of the whole 'faculty of memory'. There are, however, several serious and fundamental objections to the general mode of procedure used in these experiments—objections which entirely invalidate the general inference just quoted.

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(*a*) The number of observers employed was only six, and this number was reduced to two in three of the tests. Sometimes when an observer did not consider himself in good test form, he was withdrawn; sometimes the observer was omitted in one and readmitted in the following test. In itself the use of only a small number of observers is quite legitimate, and often scientificably preferable. There are cases, however, like the present one, in which the experimenter seeks by using a number of observers and arranging their results, to eliminate possible indirect variations and to discover *general* mental tendencies; but to attempt this by calculating an average percentage of improvement based on the results of tests with only *two* observers and in the absence of absolutely necessary precautions, appears to be a very precarious method of reaching general inferences.

(*b*) Professor Meumann attributes the entire cause of the improvement in the tests to the *practice* in nonsense syllables, thus making no allowance for the 'direct' training to be derived from the tests themselves. One test having been done, it was, of course, easier to do the similar test in the next series. The effects of Meumann's wrong inference that the improvement was entirely due to the practice, are probably aggravated by the fact that many of the tests were, to those taking part, of an unfamiliar nature, in material or method of presentment, or in both, progressive familiarity with their nature in itself bringing about a great improvement in the later tests. Some

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means should have been devised by which it would have been possible to estimate the amount of improvement due to the 'direct' training of the tests, and that due to the 'indirect' training of the practice. Logically, the whole of the improvement recorded *may have been due* to the practice involved in working the tests themselves.

(*c*) We have no guarantee that in these experiments the second and third series of tests were of the same difficulty as the first. An uncertainty of this kind clearly renders the experimenter's percentages of improvement of questionable validity, and indeed leaves the main problem as to whether there was improvement at all, still open. When an experimenter makes use of simple sense material, such as colour and sound, or even of material such as Meumann in part used, viz. numbers, letters, and nonsense syllables, where different arrangements of the members of a series make little difference to the difficulty of memorizing, in these cases it may be legitimate to measure improvement in the simple way done here. But in choosing ordinary school material, such as prose and poetry, it is clearly impossible to obtain extracts of exactly equal difficulty. Some procedure should have been elaborated for coping with this defect.

(*d*) The question as to how the improvement made can best be represented is difficult. In using percentages for this purpose it hardly seems a fair procedure to compare, say, an improvement of 20 per cent. with

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another of 10 per cent., when the former represents an advance from perhaps 50 to 60 correct items, and the latter from 90 to 99. The more nearly we approach our limit, the more difficult improvement becomes, and this is not at all brought out by means of percentages.

In addition to the general objections just urged, there are grounds for calling in question the validity of almost every test used in these experiments. In forming those in numbers, letters, nonsense syllables, and one-syllabled nouns, the ordinary experimental procedure was not followed, and the consequence is that they are full of inequalities. The method of marking, too, sometimes appears to be arbitrary. By a more reasonable method, the large percentage of improvement found, for example, in the test with verse, almost vanishes. The testing itself was occasionally conducted with laxity, for we find that the rule that a row of nonsense syllables was to be considered as learned when it could be reproduced without error in the order given was by no means strictly obeyed.

In face of methods so open to serious criticism, we cannot agree with a recent writer who asserted that the experiments just examined 'leave but slight room for doubt that the main outline of the investigation will stand the test of time'.[1]

Meumann and Ebert attribute the result to a development of the general power of memory, and recommend

[1] W. B. Pillsbury, *Educational Review*, June 1908, p. 19.

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that some formal exercise of the faculty should be conducted in all schools. This is indeed an inference of great moment, and one which demands the most careful examination. The present writer has discussed the subject in more detail in another place,[1] and believes that the facts warrant an absolute contradiction of such a conclusion.

The impetus given by Meumann to the type of experiment just described has been felt in both England and America. While Mr. Winch [2] in this country has been almost alone in tackling the problem, American Universities and Normal Schools have produced scores of such investigations. One of those carried out by Mr. Winch we shall now consider. The experiment aimed at discovering whether training in *rote* memory for meaningless material had any effect upon *substance* memory for material with meaning, two types of memory work consisting of elements so different that a positive result would go far to give considerable support to all that Meumann claimed on behalf of formal training. Indeed, according to Mr. Winch, this is almost exactly the outcome of his investigation. We shall, therefore, examine with some care the data which lead to such important conclusions.

Three independent experiments were carried out in three different schools. In one school a series of three

[1] *Journal of Psychology*, December 1911, pp. 386–457.

[2] Winch, 'The Transfer of Improvement in Memory in School-children,' *Journal of Psychology*, 1908, ii. 284; 1910, iii. 386, &c.

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preliminary tests of prose substance memory[1] was given on one day in each of three successive weeks. On the results of these the class was divided into two groups of equal ability so far as these tests were concerned, and one of these groups was practised for three days—that is, one day in each of three successive weeks—for twenty minutes, in rote memory work. The second group had no practice, and, in order that the memory should not be exercised in any way, spent the same period in drawing difficult geometrical designs. After the practice the two groups were again united and then worked one final test in prose-substance, similar in kind to the preliminary tests. Summarizing, the following results were obtained :

> The unpractised group (A) show in the final test an improvement of 10 per cent.
> The practised group (B) show in the final test an improvement of 21 per cent.,

the latter, therefore, exhibiting a superiority after training in a quite different type of memory work of 11 per cent.

Turning now from the tests to the practice medium, Mr. Winch finds that there Group B has improved by 13 per cent. But this 13 per cent. contains, he says, besides the improvement due to practice, that due to growth also. He deducts, therefore, 2 per cent.,

[1] An exercise closely resembling the school 'composition', with the difference that only the number of facts remembered was taken into account.

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a figure which, for some unexplained reason, he assigns as the amount due to growth, and infers that the practice which produced an improvement of 11 per cent. (13 minus 2) *in the practice medium itself*, has brought about a transference of improvement of 11 per cent. *in the tests*. He thus arrives at, as he himself calls it, the striking result 'that about as much or more improvement, reckoned in percentages, as has been made in the practice medium itself, viz. rote memory for meaningless things, has been transferred to the substance memory'.[1] If this result were reliable, we might once more have to admit the claim that certain material forms a most valuable 'mental gymnastic'—in fact, we might be forced to admit the whole of the claims of 'formal discipline'!

It is, perhaps, unnecessary to discuss the question of 'growth', as it seems by no means clear that in the short period during which the tests were carried on, there can be any appreciable 'growth'. This is possibly nothing more than the effect of the preceding test exercise, which naturally itself constitutes practice for the next test. We will rather turn to more fundamental matters.

Stated briefly, the following objections may be made:

1. The results are extraordinary when we consider that they are the product of only three practices of twenty minutes each, and they seem to require an unusual amount of evidential support. For it must

[1] Winch, *Journal of Psychology*, 1910, iii. 394.

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not be forgotten that this training is nothing more than three practices in addition to the many which the ordinary school-work furnishes, so that the difference in the amount of training received by 'unpractised' and 'practised' is not the difference between zero and three, but between say 100 and 103.

2. Mr. Winch's method of calculation tends to obscure the facts. For the purpose of comparing the results before and after practice, he takes the *average* of all the three test results before practice, and compares that average with the *one* result after practice. It is clear that the average results of the three tests would not be nearly so high as the one result obtained from the last of these three. The comparison of chief interest to the reader is that between the *last* of the three tests before practice and the one after practice. The failure to give this very much obscures the values of the percentages he gives. If this were done it is quite possible that the percentage superiority of the 'practised' over the 'unpractised' would be so small that the 'probable error' would show it to be nothing more than a chance difference.

3. It is not at all evident that the tests are tests of the so-called *substance* memory. Less than six lines of very simple matter was read *three* times to the class. Some children would, with three presentations, learn this extract by heart; others would be able to learn a great deal of it by heart. That is to say, the tests themselves, as well as the practices, are largely rote memory exercises.

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4. Further, the difficulty of marking such exercises is enormous. Although Mr. Winch has used a system of which the unit is very carefully chosen, the shortness of the extracts and the inevitable variation of the unit must produce unconvincing results.

5. In a somewhat similar experiment performed in another school, the children had, instead of one practice in each of three weeks, one practice in each of thirteen weeks. In this school the percentage superiority of 'practised' over 'unpractised' is much lower, namely, 7 per cent. instead of 11 per cent. This is rather surprising; but if we make the further deduction which Mr. Winch urges, namely, one due to 'growth', it becomes still smaller. Moreover, as in the first school 2 per cent. was deducted for a three weeks' growth, how much ought we to assume to cover a period of thirteen weeks? Such a calculation might sweep away the entire improvement.

There seem, therefore, reasonable grounds for resisting the large claims made in different parts of the text, and even the very modest conclusion of the author, 'that improvement through practice in rote memory for things with and without meaning, is followed by improvement in substance memory for stories.'[1]

A very ingenious attempt to throw light upon the problem was made by an American psychologist,

[1] Winch, *Journal of Psychology*, 1910, p. 405.

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G. Fracker,[1] who selected the practice and test work so that 'the elements concerned in the transference might be determined by analysis of the final results'.[2] To effect this, he arranged gradated degrees of resemblance between the tests and the practice, some of the tests coinciding with the practice in method, and others in material. This was worked out in detail in the four principal tests as follows :

1. Four shades of grey were successively shown. After an interval of four seconds they were presented in a different order. During the interval which immediately followed this, the observer had to give the order in which the first four shades were shown. Then another set of four was shown, and so on to the end. The shades of grey were graduated (1, 2, 3, 4), so that the observer had only to give the order by means of four numbers.

2. A series of nine tones, consisting of four different tones of varying intensity, was sounded by means of a tuning-fork and a telephone, and during an interval of nine seconds, the observer reproduced the order in numbers as described in the previous experiment.

3. A series of nine greys, consisting of different arrangements of the same four shades as in test 1, was presented, and during the nine seconds interval between this series and the next, the observer gave the

[1] Fracker, 'On the Transference of Training in Memory,' *Psychological Review*, Monogr. Suppl., 1908, ix. 56–102.

[2] Ibid., p. 57.

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order in which they had appeared. The responses were again made by means of numbers.

4. Four tones, composing the major pianoforte chord, were sounded, the order, duration, rate, and response intervals being the same as in test 2. The observer then had to reproduce the order by giving the names—doh, me, sol, doh.

The remaining four tests, which did not resemble the practice, as far as one can judge, consisted in the memorizing of (1) stanzas of poetry, (2) nine geometrical shapes, (3) nine numbers; and in recording from memory the distances traversed by the arm in moving the finger along a glass rod.

The training consisted in practising the memory for the order of four tones of the same pitch but of different intensities. Except, therefore, for the fact that the material consisted of sound instead of colour, the practice resembled test 1 upon the four shades of grey.

Briefly, test 1 resembled the practice in 'method' but not in 'material'.
test 2 resembled the practice in 'material' but not in 'method'.
test 3 resembled the practice partly in 'method' but not in 'material'.
test 4 resembled the practice partly in 'method' and partly in 'material'.

Test 4 differed from the training series in (*a*) dealing with differences of pitch instead of intensity, (*b*) the

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nature of the response (by names instead of numbers), and (*c*) the method of production, the sound being produced by a fork with the aid of a telephone instead of by a piano.

The varying and accurately known degrees of resemblance between tests and practice afford a good opportunity for studying the causes of the transference of memorizing power from one subject to another. There were twelve observers, eight of whom took both test and training, and four the tests only. The numerical results of the experiment may be set out briefly as follows:

AVERAGE PERCENTAGE OF IMPROVEMENT

	Trained.	*Untrained.*
1. Four greys	36	4
2. Nine tones	22	11
3. Nine greys	19	10
4. Four tones	10	−2
5. Stanzas	6·1	1·7
6. Geometrical figures	13	8
7. Nine numbers	4	0
8. Arm movements	0	−1

Assuming that the above figures are accurate, it might be inferred that the effect of the practice is visible in every one of the memory tests—that is to say, that the *specific* training has brought about a *general* development of the memorizing power. Fracker himself does not take this point of view, but sees in the general improvement a *general development of the power of imagery*. Before, however, accepting such a view, we shall have to examine the data from which such figures have been obtained.

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The very inadequate number of observers gave rise to a series of irregularities in the results:

(*a*) For example, if in the test of the nine greys we omit the remarkable performance of one of the trained observers (a leap from 39 per cent. to 95 per cent. of correct replies), there is but little difference between the results of the trained and the untrained, a difference, namely, of 13 and 10, instead of 19 and 10, as given above.

(*b*) The same fact emerges when we look into the calculation of the test in geometrical figures. Omitting again the same observer, whose jump this time is from 45 per cent. to 80 per cent., we arrive at respective improvements of 9 per cent. and 8 per cent., instead of 13 per cent. and 8 per cent.

(*c*) We see the same kind of irregularity in the results of the untrained, due to the same general cause. In the number test, for example, one observer's results show a fall from 39 per cent. of correct replies in the first, to 31 per cent. in the second test. This might indicate nothing more than a chance variation. Assuming it to be such, we must conclude from the size of the variation that the number of observers was insufficient. In such calculations it is quite evident that the number of persons tested should be such that the averages remain practically unaffected by the withdrawal of one of the individual results. This is not the case here; for if the work of the observer who showed such a large retrogression is withdrawn, the result is materially changed. The average drawn

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from the four untrained observers is, in view of such a large variation in one of the four results, scientifically as valueless as that drawn from three. Indeed, by using the results of only three observers, we find that only two tests (the four greys and the four tones) reveal a decided superiority of trained over untrained, a result to be expected from the close resemblance between these tests and the practice, and the kind of imagery employed, and closely in agreement with the introspections of the observers themselves.

Such irregularities as those just described are inevitable when results are based upon such a small number of observers. The remedy is to be found either in planning a much longer investigation of each individual—and such an increase in length would involve many new difficulties—or in making use of a much larger number of observers, so that mere chance irregularities would, on averaging, cancel one another; and with either of these methods it would be further necessary to calculate the probable error in order to demonstrate how far the adequacy of scale had been achieved.

In view of this weakness and the consequent irregularities, Fracker's results are as good as could be expected. They interestingly suggest—though they do not amount to a proof—that the identity of such definite 'method' as was followed in the tests of the four greys and the four tones, or of equally definite 'material' as in the tests of the nine tones and the four tones *is* effective in transfer. The partial coin-

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cidence of method in the nine greys appears less effective, especially if that modification of the figures is adopted which was suggested above, reducing the respective improvements to 13 and 10 per cent.

The results further suggest, what Fracker failed to note, that the transference to tests coinciding with the practice neither in 'method' nor in 'material' does not occur to any significant extent.

On the whole, therefore, we find in this experimenter's investigations no evidence for the view that there occurred a *general* development of some psychical factor such as imagery; on the contrary, it furnishes us with some corroboration of the opposed view that the training has been of a *specific* kind, most effective where the test resembled it most closely, and ineffective where the resemblance ceased.

The experiments hitherto described have resulted, according to the investigators concerned, in proving some sort of general development either of a supposed power or faculty, or of some psychical factor, such as attention or imagery. We will now give a brief account of two pieces of research work which tend to prove that there is no such general development either of 'faculty' or of psychical factor, and that all improvement outside the area of practice is due to quite other causes.

One of the pioneers in submitting this problem to experimental procedure is the American psychologist Professor Thorndike, who with the collaboration of

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Dr. R. S. Woodworth, performed, among others, the following experiments :[1]

1. Four 'subjects' were trained in judging the areas of rectangles, ranging from 10 to 100 square centimetres in size. Before and after training they were tested as to their ability to judge :

(*a*) The areas of triangles within the same limits of size.

(*b*) Areas between the limits of 140 and 200 square cm. of figures of similar shape to those of the training series.

(*c*) Areas of similar figures between 200 and 300 square cm.

(*d*) Areas between the limits of 100 and 140 square cm. of various figures—circles, trapezoids, &c.

(*e*) Areas of variously shaped figures between the limits of 140 and 200 square cm.

(*f*) Areas between the limits of 200 and 240 square cm.; and

(*g*) Areas between the limits of 240 square cm. and over.

The same type of experiments with magnitudes was carried out, using as material lengths and weights.

The results were briefly as follows :

1. The improvement obtained by training in the estimation of the areas of triangles of 10 to 100 square cm. was not equalled in the other operations.

[1] Thorndike and Woodworth, 'The Influence of Improvement in One Mental Function upon the Efficiency of Other Functions,' *Psychological Review*, 1901, iii. 247–61, 384–95, 553–64.

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2. Change in size without change in shape decreased the amount of improvement in proportion generally to the amount of change.

3. A still further proportional decrease in improvement occurred when both size and shape were changed.

There was generally, however, an improvement in the tests taken after the practice, as might have been anticipated, seeing that test and practice exercises were so similar. To this increase of power, Thorndike assigns various possible causes :

1. 'It may be due to the establishment of more accurate mental standards and more delicacy in judging different magnitudes by them. A tremendous difference must take place in judgement as the observer gets familiar with the unusual standard of gramme or centimetre. But even here, with many individuals, familiarity with the new standard is impotent to influence the judgement.'

2. 'The training might also give ideas of how most successfully to estimate, habits of making the judgements in better ways, of making allowance for constant errors, of avoiding certain prejudices. These habits might often contain features in which the function trained and the functions tested were identical.'

3. 'The training might give some mysterious discipline to mental powers which we could not analyse, but could only speak of vaguely as training of discrimination or attention. If present, such an effect should be widely and rather evenly present,

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since training in every case followed the same plan. It was not.'

4. 'For functions so similar and for cases so favourable for getting better standards and better habits of judging, the amount of improvement gotten by training in an allied function is small. Studies of the influence of the training of similar functions in school and in the ordinary course of life, so far as we have made such, show a similar failure to bring large increases of efficiency in allied functions.' [1]

In a further series of tests the same investigator showed that 'training in perceiving words containing e and s gave a certain amount of improvement in speed and accuracy in that special ability. In the ability to perceive words containing i and t, s and p, c and a, e and r, a and n, l and o, misspelled words, and A's, there was an improvement in speed of only 39 per cent. as much as in the ability specially trained, and in accuracy of only 25 per cent. as much. Training in perceiving English verbs gave a reduction in time of nearly 21 per cent., and in omissions of 70 per cent.; the ability to perceive other parts of speech showed a reduction in time of 3 per cent., but an increase in omissions of over 100 per cent'.[2]

The author of these experiments does not claim that

[1] Thorndike and Woodworth, 'The Influence of Improvement in One Mental Function upon the Efficiency of Other Functions,' *Psychological Review*, 1901, iii. 247–61, 384–95, 553–64.

[2] Thorndike, *Educational Psychology*, p. 90.

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the individual records are to be taken too seriously. He admits that the tests before and those after practice were rarely perfectly equal in difficulty. Certainly the last test described above would not lead his readers to place much confidence in it, and consequently in any of the others. The author does claim, however, that general tendencies are demonstrated, and by this he means that he has obtained sufficient evidence to show that the old doctrine of formal discipline is false; that transfer of power only takes place when there exist in the two operations identical elements.

It is convenient to give here the summary of inferences made by Professor Thorndike and his collaborator.

1. 'Improvement in any single mental function need not improve the ability in functions commonly called by the same name. It may injure it.'

2. 'Improvement in any single mental function rarely brings about equal improvement in any other function, no matter how similar; for the working of every mental function-group is conditioned *by the nature of the data* in each particular case.'

3. 'The very slight amount of variation in the nature of the data necessary to affect the efficiency of a function-group makes it fair to infer that no change in the data, however slight, is without effect on the function. The loss in the efficiency of a function trained with certain data, as we pass to data more and more unlike the first, makes it fair to infer that there is always a point where the loss is complete, a point beyond which the influence of the training has

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not extended. The rapidity of this loss—that is, its amount in the case of data very similar to the data on which the function was trained—makes it fair to infer that this point is nearer than has been supposed.'

4. 'The general consideration of the cases of retention or of loss of practice effect seems to make it likely that spread of practice occurs only where identical elements are concerned in the influencing and influenced function.'[1]

[1] Thorndike, *Educational Psychology*, pp. 91–2.

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CHAPTER III

REVIEW OF EXPERIMENTS (II)

In the preceding chapter we have seen that some experimenters, such as Meumann, take up the extreme position that the one-sided practice (in his case the memorizing of nonsense syllables) of a so-called 'faculty' (e.g. memory) affects the power to deal with *all* other material upon which this 'faculty' may be employed. Other experimenters, such as Thorndike, find that the effects of the one-sided practice are *not* general, but that the power gained in the training medium (e.g. nonsense syllables) is always *less* when transferred to other media (e.g. lists of meaningful words), and sometimes when the media are very different (e.g. in verse or numbers) may vanish entirely.

If the reader will substitute in place of the word 'memory' in the preceding paragraph the word 'judgement', or 'observation', or 'imagination', or 'attention', or indeed any word representing a supposed 'general' power, he will better see the important implications of the two so opposed views and the necessity for further experiment.

The present writer's investigations represent in the domain of memory a renewed attempt to solve this question. The object of the experiments now to be described was TO ASCERTAIN THE DIRECTION, THE

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AMOUNT, AND THE CAUSES OF A POSSIBLE TRANSFERENCE OF MEMORIZING POWER FROM ONE TYPE OF MATERIAL TO ANOTHER; IN OTHER WORDS, TO DISCOVER WHETHER THE MEMORIZING OF CERTAIN KINDS OF MATERIAL AIDS IN ANY WAY THE MEMORIZING OF *ALL* OTHER MATERIAL; IF NOT, WHETHER IT HELPS ONLY IN MEMORIZING CERTAIN OTHER AND DIFFERENT MATERIAL; AND IF SO, WHAT KIND OF MATERIAL IS AFFECTED, TO WHAT EXTENT THE IMPROVEMENT OCCURS, AND TO WHAT CAUSES THE IMPROVEMENT IS DUE.

To bring these points out in the clearest possible way, practice and test material were chosen which appeared to bear varying degrees of relationship to one another. It will be remembered that Fracker succeeded in doing this in a very ingenious manner. His method was employed here as far as it seemed appropriate when dealing with more complex material and with large groups of school-children. The possibility of errors arising as a result of averaging the individual measures of a very small group—errors which we think actually occurred in Fracker's calculations—was obviated by the use of large numbers of pupils. This arrangement had the additional advantage that tests and practice could be carried out under normal school conditions. The material, too, was to a considerable extent of the ordinary school kind—tables, dates, dictation, verse, composition—so that on the whole the pupils were working under natural and familiar conditions.

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Meumann's error in regarding all improvement as demonstrating a transfer of power was obviated by constituting a group of pupils who underwent all the tests, but received no training—a procedure to be explained shortly.

The results obtained by Mr. Winch, in which he found a close connexion between the two processes involved in rote and substance memorizing, appeared so important that it was felt necessary to subject the matter to further tests. Partly for this reason and partly because of the intrinsic importance of the question, a portion of both tests and practice consisted of rote and substance memorizing work. By making the composition extracts longer and the readings fewer, by instituting comparisons between the *one* test taken immediately before the practice and that taken immediately after, an attempt was made to avoid the errors which we think may have caused discrepancies in Mr. Winch's results.

Thus the experiments about to be described represent at the present time [1] the most recent effort to elucidate the problem of formal training. With the experiences of eminent investigators before him, the present writer has endeavoured to imitate the strong and avoid what appeared to him to be the weak points of their work.

The general arrangement of the experiment was as follows:

A series of ten different memory tests was followed by twelve half-hour periods of practice, four periods

[1] February 1914.

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in each week; then another series of ten similar tests, followed again by twelve more half-hour periods, distributed as before, and succeeded by a third series of tests.

The whole of this procedure was carried out in three separate schools, in each case with children of the average age of 12 years 8 months.

The tests were of the following kinds:

(a) *Tests in which several presentations were given.*

1. The exact placing from memory of dots within circles after several views of a large cardboard copy.
2. The memorizing of dates.
3. Nonsense syllables.
4. Verse.
5. Prose extracts.
6. The recall of the *substance* of a prose extract.

(b) *Tests in which only one presentation was given.*

7. Geographical positions, two and three at a time, were shown once upon a wall map, and the children were then required to place them from memory in an outline map of the world.
8. Dictation of continuous prose in portions of gradually increasing length (from eight to nineteen words).
9. Letters dictated from four to eight at a time.
10. Christian names and surnames dictated together in twos, threes, and fours: the surname was then given, and the children were required to write down the Christian name belonging to it.

In the last four tests only one presentation was

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given, and then an exact reproduction demanded. In the first six, a number of repetitions was always allowed; in that of prose substance, however, only two. The three following tests are appended in detail as examples of the procedure:

1. *Points in circles.* This was an adaptation of a test used by Macdougall and Burt.[1] Circles of 18 inches in diameter were drawn upon white cardboard, one upon each sheet. Within the circles were heavy black spots of $\frac{3}{4}$ inch diameter, and varying in number from three to six. The children were provided with paper of foolscap size, ruled into squares of $\frac{1}{3}$ inch, upon which circles of four squares' radius had been traced. One of the large cards was hung in front of the class, the circle upon it being covered. An exposure of one second was then given, immediately after which the children attempted to reproduce upon their own paper the positions of the spots. It was previously explained that the position of every spot upon the plain large circle corresponded with a junction of lines upon the foolscap. Each card was exposed six times, the children thus making six attempts to remember the exact positions relative to the circle and one another. No one was allowed, however, as her estimate of the positions became more correct with repeated views, to alter or fill in any circles left totally or partially blank. The marking consisted in estimating the number of correct positions.

2. *Prose substance.* A piece of prose, well within

[1] Burt, *Journal of Psychology*, 1909, ii. 150, 151.

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the comprehension of the children, was read twice to them, and they were asked to write the substance of it. This method was adopted in preference to the 'questionnaire' because, although not so easy to mark and assess numerically, it involved a smaller expenditure of time; when treated in this way it became a more usual form of test to the children, and it avoided the difficulty of suggestion. In practice it was quite easy to assess. Every correct fact was given one point; for example, such a phrase as 'fierce little scorpions', or 'the warm, sunny South', received three marks, one for each so-called fact, viz. 'fierce', 'little', and 'scorpions', whether the exact word was given or not. The whole of the exercises were marked by the experimenter, a rigid uniformity being in this way maintained. The nature of the test is best understood by an example:

'Plenty of these fierce little scorpions, which hide under stones by day and come out by night, may be found in the warm, sunny South, and though they look like crabs, they are real land animals. They have no means of spinning, and have a poison dart in the tail, yet they belong to the spider family, as may be seen by their four pairs of legs, their sharp pincers which take the place of the feelers of insects, their claws which are part of their mouthpieces and are fixed to the jaws, and narrow slits under the stomach, through which they take in air to breathe.'

3. *Letters.* Consonants only were used in this test, in order that there should be very little tendency on

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the part of the children to seek secondary associations. The test was composed of sixteen series of letters: Nos. 1 and 2 consisted of four letters each; Nos. 3 and 4 of five; Nos. 5 to 8 of six; Nos. 9 to 12 of seven; and Nos. 13 to 16 of eight letters each. Each series was dictated by the experimenter once, the children immediately attempting to reproduce. In the marking an omission or addition was reckoned as one error; a letter one place out of position, as half an error; more than one place out, three-quarters of an error. The total number of errors was deducted from the entire number of letters to find the total of correct items.

It is necessary to lay great stress upon the procedure followed in this investigation. We have to thank Professor Spearman for the suggestion of this procedure, which differentiates the present attempt to solve the problem from all others, and which, we believe, goes far to remove the possibility of such errors as we have had occasion to point out in the work of other experimenters.

A careful, but naturally only partially successful, attempt was made to compose three series of tests of equal difficulty. In several tests this was practically secured, as, for example, in those upon points, nonsense syllables, and letters; but it was out of the question when dealing with material such as prose, poetry, and prose substance. In order to eliminate this difficulty, a difficulty to which no experimenter

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had hitherto paid attention, and one which is vital in any attempt to solve the problem on these lines, *each school did the tests in a different order*—thus :

School X took first—test series A, then B, and finally C.

School Y took first—test series B, then C, and finally A.

School Z took first—test series C, then A, and finally B.

So that by comparing the pooled average results of the first test series of all three schools with results similarly obtained of all three schools in the second test series, and also with those of the third series similarly, we may be certain that any observable difference between these results is, at least, not due to any increase or decrease in the difficulty of the tests.

In each school, after the first test series, the class was divided, in a way well known to readers of Mr. Winch's work, *into four groups of equal memorizing ability*. The necessity for constituting a group having *no* practice is obvious. Improvement made by those receiving training will not of necessity prove the beneficial effects of practice. The improvement which will demonstrate this must be one which is superior to that made by the *un*practised.

The following four groups were formed :

1. A group which received no training.
2. A group which practised verse.

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3. A group which practised tables.

4. A group which practised the reproduction of the substance of prose extracts.

This division into groups was based upon the numerical results of the first test series, the average number of correct items for each group being the same.

After the first period of practice, the four groups were amalgamated in order to undergo the second test series. Then once more in their same respective groups they took the second period of practice, joining again finally to take the third test series. In this way it was possible

(*a*) to compare the results of those who had practice with the results of those who had none, and thus to ascertain the presence or absence of transfer of power;

(*b*) by noting which tests showed improvement, to ascertain the exact effect of each kind of practice, and

(*c*) perhaps to find out which elements of the subject-matter memorized or of the processes used in the memorizing were effective in producing any improved power which the results might demonstrate.

In order, further, that each group should receive exactly equivalent treatment, the supervisors of the practices passed in rotation to a different group each week.

Thus, precautions were taken in all essentials:

(*a*) The test series were made, in the manner described, exactly equal in difficulty; their results were therefore strictly comparable.

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(*b*) The groups were, so far as these ten tests were concerned, of equal ability, so that they were also comparable.

(*c*) Each group received the same amount of practice.

It is obviously unnecessary in this brief *résumé* of a rather lengthy experiment to trouble the general reader with an account of the statistical procedure adopted. It is perhaps sufficient to direct his attention to a full description given in another place.[1] The results may be briefly set out as follows :

1. There was a general improvement in all the tests ; even those children who received no training whatever showed improvement. This would, of course, be due first and foremost to the effects of 'direct' practice ; that is to say, the working of one set of tests served as practice for the other series of tests.

2. There was, however, *no general improvement of*

NOTE.—The following general precautions taken may be of interest to teachers :

(*a*) Each child was provided with a large sheet of blotting-paper, which she moved slowly *down* over her paper as she wrote her answers, the chances of copying being thus reduced to a minimum.

(*b*) All answers were written with a lead pencil, in order to obviate technical writing difficulties.

(*c*) Full time was allowed for every answer, so that every child did *all* that she was able.

(*d*) No test was begun or carried on unless every child appeared to be giving her attention.

(*e*) Careful explanation as to what the child was expected to do was made, and every unfamiliar test was preceded by a short practice.

[1] *Journal of Psychology*, December 1911, pp. 413 ff.

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trained over untrained. The training, that is to say, did not improve what has been wrongly called '*the* memory'. Its effect was quite specific, affecting some tests and not others. There was no sign of any 'formal discipline', such as Meumann thought he had discovered. Dealing with the three trained groups, we can see that, with each of the three test series composed of ten separate tests, and with three groups of children receiving training, it was possible, if the effects of practice had been at all general, for ninety items to have shown this result. Instead of this, we find only ten items which give any reliable indication that the practices exercised any influence whatever.

The result of the specific training was thus in about nine-tenths of the tests nil; in a few cases only was it effective in producing improvement; in one case it had an impeding effect. *There is therefore nothing to warrant the assumption of a general memory development.*

3. Dealing first with the effect of the practice upon what appear to be very kindred test performances, we find the following concrete instances:

(*a*) The practice in reproducing the substance of prose extracts naturally brought about a considerable superiority of that group over all others in the corresponding test.

(*b*) The training in verse, at first sight strangely enough, had no effect upon the test work with the same kind of material. This we must, I think, regard as one of the most conclusive proofs of the specific nature of the training, and as agreeing in a remarkable

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way with the result of Professor James's experiment, previously mentioned. The test stanzas were extremely simple and easy of comprehension; those of the practice were in general of much greater difficulty and complexity of thought. In the tests, too, the children were always told how many repetitions they were to be given; in the practice, never. This would involve a quite different distribution of attention. In the practice, again, repetition continued until the extract was thoroughly learned; in the test, in order to discriminate between individuals, and to allow room for improvement, only a minimum of repetitions was given. Further, the practice work in this subject resembled very closely the ordinary school work in such a subject, except that it consisted purely of memorizing, without exposition. Such school exercises are often carried on after the first few readings of a poem in a mechanical fashion, and with a very widely distributed act of attention. In the tests, however, the children gave all the attention of which they were capable. Moreover, of course, test conditions were much more strict than those of the practice. These differences amongst so much similarity seem sufficient to account for the absence of transference of power from the one operation to the other.

(*c*) An explanation on similar lines must be employed to make clear the reason why practice in tables did not have any effect in the apparently kindred task of date memorizing.

It is interesting to reflect that if in such closely

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related material there was no transference, the amount of formal training derivable from any one school '*subject*' must be immeasurably less than has been commonly assumed.

4. Turning now to the effects of practice upon what appear to be less kindred performances, we arrive at the following facts :

(*d*) The training in verse and tables exercised a powerful influence on the memorizing of nonsense syllables ; but

(*e*) Practice in prose-substance left nonsense syllables entirely uninfluenced.

The former results (*d*) are almost certainly due to the use of rhythm. In the memorizing of verse and tables it was natural to resort to rhythm ; the development of rhythm through the lengthy practice gave the children a greater power of employing it and getting the most out of it, in any subject that allowed of its use. In the training in prose-substance, however, rhythm was impossible ; there was, therefore, no improvement in nonsense syllables. The use of the common element of rhythm brought about transfer ; the absence of the common element was marked by the absence of transfer.

A somewhat remarkable and illuminating result appeared here too. The group practising tables did better in nonsense syllables than the group practising verse ; the cause of this may be found in the fact that tables and nonsense syllables have another factor common to them over and above that of rhythm.

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The associations are in both cases arbitrary. Poetry, on the other hand, differs in these respects altogether from nonsense syllables.

(*f*) After the foregoing, it should not surprise us to find that the training in the memorizing of verse had no effect upon the dictation test. It is evident that the points of dissimilarity outweigh those of similarity, and that the two mental processes corresponding to the two exercises had no usable relationship, but functioned independently.

(*g*) It is possible to infer from the statistical results, but the inference is by no means certain, that the training in reproducing prose substance was transferred to the literal reproduction of prose. It is clear that there are very important common elements in the two functions; it is not so clear that the children found these common elements usable.

A short time after the completion of the experiments just described a further and quite independent series of very similar tests was carried out with two classes of training-college women students from 18 to 19 years of age. Owing to the investigator's limitations with regard to time and control of studies, the number of tests was reduced to six, and the test series to two. The same cyclic arrangement was used and similar practice groups were formed.

The tests, though similar, were somewhat longer, and consisted of (1) dates, (2) nonsense syllables, (3) poetry (by heart), (4) prose (by heart), (5) prose

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substance, and (6) letters—only one test (letters) thus being included in which a single presentation was given.

The results show a remarkable correspondence with those of the preceding experimental series, with, however, certain interesting differences.

1. There was again a *general* improvement of all the groups in the second test series.

2. There was again *no general superiority of trained over untrained*, very few items giving any indication of such superiority.

3. A surprising result was obtained as a consequence of practice in memorizing the gist of prose selections. The group thus trained showed *less* improvement in the second test in nonsense syllables than the untrained. This implies—and the introspections of the students confirm the inference—that memorizing of intelligible material by means of establishing thoughtful and logical links, is capable, at any rate for the time being, of diminishing the power to memorize mechanical unmeaning material. The fact that mechanical memorizing work is repugnant to students and not to school-children is sufficient to account for the difference in the two results.

4. Another difference is noticeable. The group practising tables shows this time no superiority in the nonsense syllables test. This appears to be due to the fact that the complicated tables used in the practice did not admit of the application of rhythm; the figures involved were for the most part visualized.

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5. Thrown back thus upon visualization for assistance in committing the tables to memory, the students were able to use this very special kind of visualization for the learning of dates, in which a marked superiority of 'trained' over 'untrained' is visible.

On the whole, therefore, the results of our experiments are in agreement with those of Professor Thorndike, and opposed to those of Professor Meumann. Where the latter finds an all-round improvement through specific practice, we find only a very occasional and partial improvement, this occurring only where there are elements common to practice and test exercises. This latter point is brought out still more clearly when we examine the introspections made by those who took part in the tests.

Using, then, both our actual results and the introspections of the students, we are enabled to make a few general inferences.

1. Specific memory training is specific in its effects; there is no general memory function which can be developed by feeding it upon any one material. With the establishment of this fact, the whole house of cards known hitherto as 'formal memory training' and 'memory gymnastics' collapses. And if this be the case with memory, it may be equally so with the functions known as judgement, observation, and others.

2. Psychical factors, such as attention and imagery, are not capable of *general* development merely by

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means of a one-sided training. Attention to arithmetic is an activity which may increase without having any influence whatever upon the power to give attention to good manners or to the names of streets. Acts of attention are not simply acts arising as a result of a central fiat or power; they are rather distinct and separate acts, differing from one another according to the stimuli which set and keep them going. Imagery, too, is not the product of a 'faculty' in the old sense, but a hierarchy of specific powers, which are often related to a surprisingly small extent. The power to form images of written words may develop side by side with a remarkable lack of power to image word sounds.

3. One other general inference is of great moment and interest. In those few cases where improvement was brought about in one exercise through practice in another, as for example where practice in tables resulted in a development of the power to memorize dates, the improvement is never equal to that made in the practice medium itself. In other words, the 'indirect' is always less than the 'direct' improvement. A computation showed that 'direct' was worth, on the average, about 144 times 'indirect' practice. Without attaching too much importance to the exact figures, there is ample evidence that the effects of 'direct' outweigh immeasurably those of 'indirect' training, and inferentially that the schools have occasionally wasted much valuable time.

If such statistical results are obtained when the

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practice and test material are so similar, as they were in these experiments, what must be thought of the value of really '*indirect*' training as, for example, when grammar is taught in order to develop the general power of reasoning, and is honoured by being called the 'logic of the elementary school'?

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CHAPTER IV

THE THEORY OF THE COMMON ELEMENT

Assuming that the results of the last described investigation are correct, we shall find it necessary to study carefully the tests where transfer occurred, in order to find out under what conditions we may expect that practice in one material will improve the power in another.

The chief explanation hitherto suggested is that it is due to common elements; it is said that, when two subjects have one common feature or more, practice in the one subject will result in augmented power in the other. Suppose, for example, that a piece of work 'A' consists of the elements *a b c d e*, and that these elements are repeated in the same order again and again until each and all are performed skilfully. The theory of the common element asserts that any other piece of work consisting of elements partially identical with the first (say *e f g h j*—identical with respect to '*e*') will also be better done, i. e. transfer of power will occur. Expressed in mental terms the theory of the common element asserts that whenever two psychical functions have identical elements, there transfer will occur. 'One mental function or activity improves others in so far as and because they are in part identical with it, because it contains elements common to them.'[1]

[1] Thorndike, *Principles of Teaching*, chap. xv, p. 243.

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Consider for a moment any particular piece of work; for example, the memorizing of a multiplication table. The material to be memorized consists of numbers; we may have a written copy of the table to learn from, or it may be repeated to us; the means by which we memorize it may be predominantly visual, or auditory, or kinaesthetic imagery; we may learn it sitting at a desk or walking up and down, when fresh or when fatigued, and indeed under a great variety of conditions. Another piece of memory work may possess elements identical with some of those just described; this would be the case so far as material is concerned, if the exercise consisted in memorizing dates. Numbers, in this instance, would be one element common to both.

It appears, therefore, that the common elements are separable into the following four classes:

1. Common elements of *material*; as, for example, numbers in arithmetic and algebra; the grammar or words of Latin and French.
2. Common elements in the *method of presentation*; as, for example, when the auditory method is used in teaching verse and song to infants.
3. Common elements in the pupil's *method of learning*; as, for example, the use of rhythm in memorizing poetry and multiplication tables.
4. Common elements in the *attendant circumstances*; e.g. similar bodily conditions, the same length of exercise, the same experimenter, the same time of day, &c.

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Can we regard the theory of the common element as being a complete or satisfactory explanation? It is true that our own experiments, and indeed all experimentation of recent years, agree in demonstrating that practice sometimes produces some amount of transfer; Professor Thorndike further contends that this takes place wherever an exercise involves any elements previously made use of in the practice. There are reasons, however, why we cannot regard this theory as a true or full explanation of the facts. Among these reasons we may mention the following:

1. There are probably common elements in almost all mental processes, but our results show no approach to a general transfer of power. On the contrary, transfer appeared in very few tests, although, since all of them were tests in memory, we should expect to find the common elements numerous and prominent.

2. Some common elements which have hitherto been regarded as specially useful for transfer, such as those of *material* or *content*, do not always operate in this way. For example, practice in memorizing verse had no effect upon the learning of prose.

3. Common elements, too, in the *method by which the material is presented* may also be quite ineffective, as when tables and prose are both presented auditorily. This is to be expected; for recent experimental work has proved that an individual may, in the process of memorizing, translate auditory symbols into visual imagery or visual symbols into auditory imagery; and, further, that in one exercise he may make use of

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the auditory and in another of the visual image with as little apparent reason as can be found for the fact that there are times at which we cannot touch one particular kind of food which at other times we relish.

4. Common elements in the *individual's methods of memorizing* are often inoperative for transfer. Two exercises may both be mastered by means of visual imagery or by purely mechanical repetitions; and yet the practice in one may have no effect upon the learning of the other. It is true that such common features *are* occasionally effective in aiding the memorizing of another subject-matter. We find, for instance, that training in tables produced through the common use of rhythm a great improvement in the memorizing of nonsense syllables. To this point we shall have to return; at present we are concerned in noting that even such elements may be entirely inoperative.

5. Lastly, *common external conditions*, such as the general bodily feelings, time of day, lighting, apparatus, personality and mood of experimenter, severity of test conditions, presence of companions, position in the classroom, and many others which in any careful investigation must be arranged and kept constant; such conditions as these do not ensure transfer.

It is true that *if* this tantalizing and ever-fleeting transfer is to be obtained, elements must be present in the practised and unpractised material which are common to both; it is also true that where these common elements are of a striking kind, transfer is

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more likely to take place. There is some likelihood, for example, that the memorizing of tables *may* be facilitated by practice in memorizing areas or populations, because the material is very similar in the two kinds of work; or that the learning by heart of a melody *may* be made easier for the pupil of the infant school by practice in learning verse, because in both instances the teacher presents the matter orally. Similarly practice in memorizing prose *may* aid in memorizing poetry, provided the pupils rely in both cases upon visual imagery; and lastly we *may* give some help to our pupils if we make the attendant circumstances strikingly similar in two otherwise different exercises.

Granting all this, we are still unable to admit the wider contention that, wherever common elements occur, there transfer takes place. We can only go so far as to agree that common elements exist wherever transfer takes place. But we cannot conclude that the mere presence of common elements ensures transfer. To do so would be to fall into the same kind of error as to argue that all flesh-eating beasts are lions because all lions eat flesh.

As an emendation of this fallacious theory it has been asserted that to obtain transfer one *must be aware* of the common elements. We have, however, only to examine a few instances of transfer to see that this assertion is also untrue. Does the child know, for example, that the 'singing' tone he drops into in repeating tables and verse is an element common to and helpful in both exercises? Now although *improve-*

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ment through transfer is greatest where the common feature is identified and consciously used, it is certainly not true that transfer can only take place when the individual is thus aware of the elements which are common. He may be quite unaware of the fact that the less familiar subject possesses important features in common with another familiar and long-practised subject, and yet he may, unknown to himself, make use of such common features. In my own experiments, a remarkable improvement was noted in the learning of nonsense syllables through long practice in tables; but not one child was able to discover that this was due to the use of rhythm in both cases. Teachers know that in seeking to lead their pupils to the formulation of a new rule in arithmetic, a considerable number of easy examples may be given and accurately solved long before the class perceives that there is one method or rule common to them all.

Before dismissing for the present this modified view of the theory of the common element, it is worth while pointing out that in one of its aspects it is of immense importance to teachers. If spread of training is so rare, if it is greatest where the common feature is identified and consciously used, then every effort should be made to bring about this identification, this consciousness of the presence of an important common element. At the same time we must be prepared to admit the possibility of transfer where there is no awareness of the presence of a common element.

Summarizing, we may say that the theory of the

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common element is by itself no solution at all of this problem. The most that we can say is that wherever transfer of power occurs, there we shall find, if we search carefully enough, common elements which have been used consciously or unconsciously to establish connexion between the two processes, and have thus made transfer of power possible. We shall therefore have to distinguish between the common element and the *usable* common element, the latter being serviceable in transfer owing to its striking nature, to the frequency with which it occurs in familiar combinations, or to other causes which we shall consider presently. Owing to one or another of these conditions, we are able mentally to separate this usable common element from its accidental associates, sometimes being aware and sometimes unaware that we have done so.

Of what nature are these usable common elements? My own experiments suggest (1) that similarity in material and method of presentation are of inferior value, and (2) that the really important resemblance, or, in other words, the *most usable* common element, is to be found in the 'form' or method of learning. For proof of the first suggestion, we found that the learning of a great deal of verse had little or no effect upon the learning of prose; nor did the children who were long practised in tables improve their power of memorizing dates. It would seem that similarity neither in the material nor in the method of presentation, viz. the auditory, had any effect.

For proof of the second assertion, we have the

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introspections of the students, whose explanations always refer to the method of learning.

The materials of arithmetic and algebra are similar in that they consist of symbols for concrete quantities; Latin and French have a common material basis consisting of sensible words; yet the chief similarity which makes it easier to learn the one after having mastered the other is that of method. Our approach to the subjects, our inspection of the data, our arrangements for learning vocabularies, for translating, and for doing a thousand and one things in studying them, are the same. Even the acquired ease in turning the leaves of a dictionary is distinctly useful in simplifying the study of another language.

To conclude. Practice, we have seen, gives rise to a specific habit, which will tend to function whenever the same stimulus occurs or whenever a stimulus with predominantly identical elements occurs. The latter we have called the usable common elements, and they vary within limits according to the individual mind. Further, although the stimulus and the whole activity which follows upon it are united in one specific process, nevertheless experience shows us that by an act of abstraction brought about by attention we may in thought separate some of the diverse elements of the process. We may, for example, think chiefly and even only of the *method used in learning*; or, if teachers, we may concentrate our attention mainly upon the *method of presentation*. By so doing we may find it possible to apply the method used in one exercise to another, new

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and unfamiliar, so as to give rise to transfer of power. We know, however, that mere practice in the special dexterity or habit will by no means ensure the performance of this act of abstraction. Many a well-read person has altogether failed to abstract from his reading ideas or ideals which can function in his own life. His reading has remained a specific and separate thing. And this is apparently by no means unusual. Our own investigation suggests that children, as we should expect, are much less able to make use of common elements than adults. While children needed considerable practice in order to acquire the habit of using rhythm where it was helpful, the students saw its use after only one exercise; and the latter showed themselves ready to make use of the element of visualization of figures, while the children failed altogether to do this.

Before concluding our review of the theory of the common element, it is necessary to say a few words upon another theory which is closely related to the one we have just found inadequate. This second explanation is based upon the assumption that there exist such things as '*generalized habits*'.

Horne argues that nature may have 'endowed the nervous system with *general* instincts and that man may endow his own system with *generalized* habits'.[1] He says: 'The tendency to imitate seems independent of any particular stimulus or class of stimuli, but is

[1] Horne, *The Psychological Principles of Education* (The Macmillan Co.), p. 73.

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ready to go off at any imitable model whatsoever. Do or say anything that you choose, and your three-years old child will usually imitate you. Here apparently is what we may call a generalized instinct. Similarly it is possible to say in advance what particular things will arouse the child's instinct of fear or pugnacity. Apparently they exist in the nervous system as what we may call generalized racial habits.'[1] The author then argues by analogy that 'what nature has done for the race as generalized instincts man can in a way do for himself as generalized habits. There seem to be habits of doing as well as habits of deeds. Thus one may be in the habit of disagreeing with the expressed opinion of another, whatever that happens to be. . . . Professor Royce instances "fickleness" as a generalized habit. If the nervous system does indeed admit of the formation of such generalized tendencies of "discharge" (in the case of "generalized instincts") then we may legitimately conclude that habits of voluntary attention, doing one's duty, promptitude, accuracy, industry, and the like, *once formed in any connection*, are at least *somewhat serviceable* in other connections'.[2]

With the last statement one cannot but be in considerable agreement. Almost every experimental investigation of the last fifteen or twenty years bears testimony to the fact that some habits are 'serviceable in other connections'; that transfer of power is under certain conditions possible. But Professor Horne's

[1] Horne, *The Psychological Principles of Education* (The Macmillan Co.), p. 74. [2] Ibid., p. 75.

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assertion involves much more than this. In it the term 'generalized habit' receives by no means its full and usual connotation. No meaning can be attached to the paragraph about generalized instincts and habits, just quoted, unless the author is using the term 'generalized habit' to mean 'a specific response which may be the result of many *different* stimuli', and we contend that, using the term in this sense, no such thing as a 'generalized' habit exists.

Before dealing with Horne's arguments, it will clear the ground if we first consider what is to be understood exactly by 'habit'. We ordinarily mean that a reaction, occurring again and again through the frequent appearance of certain conditions or stimuli, has been acquired in such a way that on the appearance of the stimuli it is set off with a minimum accompaniment of consciousness and a maximum degree of perfection. Thus we have formed the habit, in the presence of particular stimuli, of dexterously turning the leaves of a book, or of writing with pen and ink. Now it is clear that the stimuli—the particular size of book, texture of paper, shape, weight, and length of pen, &c.—are never *exactly* the same, and yet are sufficiently similar to induce the habitual action. And if it must be admitted that the whole of those *objective* elements which we call collectively the stimulus are never exactly the same, although they give rise apparently to the same external movements which we call the 'habit', it must also be conceded that the corresponding *mental* elements never repeat themselves exactly.

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It may seem hardly worth while to insist on these patent facts; but misconceptions concerning habit and training are constantly arising through the failure to keep them well in mind. If we adhere strictly to this view we must deny the existence of the so-called 'generalized' habit: for it is not the difference but the similarity of the stimuli which starts the habitual action. It is, in fact, the common element.

It is doubtless true that a certain habit may be set going by what at first sight appear to be different stimuli. But they may be only superficially different. For example, I have perhaps acquired the habit of holding a button of my coat when reciting my lesson. This habit may in the course of time appear whenever I have to make a public speech or an embarrassing proposal; or even whenever I have to write an important letter. In all these cases the stimuli seem to be different. But the real stimulus, appearing amidst other and changing circumstances, is probably the fact of a certain degree of nervousness, and it is this common element which in each instance gives rise to the habitual movement.

Again, take what Professor Royce calls 'the generalized habit of fickleness'. Common experience teaches us that no one is fickle in *all* directions. The expression can therefore only mean that the person is fickle in certain and perhaps numerous departments of life; that many situations apparently different give rise to the same fickle responses. Secondly, a deeper investigation of the stimuli or causes of the habit might probably discover that in all these apparently different instances

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there existed some common element, such as a desire to obtain the approval of certain persons, or perhaps an unusually intense appreciation of the arguments of the last speaker through inability to remember the words of the previous speakers. One of these causes might easily be present in every case of a fickle response, and therefore the stimuli cannot legitimately be said to be different. We have therefore in this instance not a generalized habit provoked by many different stimuli, but a specific habit arising from a specific stimulus. Exactly the same explanation will fit the other case mentioned by Horne, that, namely, in which a person is represented as possessing the generalized habit of disagreeing with the expressed opinions of others.

From this view of the nature of habits and of the stimuli by which habitual actions are set going, we may make two useful inferences:

1. The term 'generalized', used with reference to habits, is employed by Horne and others in a most unusual and unfortunate manner. It is true that the range of a habit may be extended, owing to the fact that the stimulus occurs frequently in the midst of a large diversity of attendant circumstances; but such an *extension* is far removed from anything of the nature of a *generalization*. It cannot, for example, be said that the operation of addition is generalized when it becomes incorporated as part of a multiplication sum; or that the habit of swimming in fresh water becomes in any way generalized by learning to swim in the sea. Every habit is specific in character—that is, it consists of a

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definite series of movements arising as the result of the action of a definite stimulus. If this stimulus is changed the consequent movement or response is not generalized but changed also.

I have called Horne's use of the term 'generalized' unfortunate for a further reason. We have already seen that Meumann and other experimenters assert that one-sided practice has *general* effects; that in the case of memory, for example, the power acquired in the practised medium is generalized in such a way that it is applicable to *all* memorizing work. The false notion of 'generalized habits' is then made use of to confirm such a view, and it is the improper term 'generalized' upon which this confirmation depends.

2. There is no doubt that the range of a definite habit may become greatly extended. The stimulus may appear amid an increasing variety of associations, as, for example, when the drinker's desire for alcohol is found combined with various other conditions, such as the wish to be friendly, to show his power of observing moderation, to warm the body, to stimulate the imagination, and so on. The same stimulus is present as the common element in all these cases, even when unnoticed by the person concerned. We have already seen that the theory of the common element does not adequately account for the spread of the effects of practice. While, therefore, we must admit that Horne approaches the truth when he says that 'habits of voluntary attention, doing one's duty, promptitude, accuracy, industry, and the like, once formed in any connection, are at least

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somewhat serviceable in other connections';[1] yet in the light of our own results it is essential to modify the statement as follows:

'Habits of voluntary attention . . . once formed in any connection, *may be* at least somewhat serviceable in *some* other directions.'

The presence of common elements in the stimuli does not, as we have seen, ensure this extension of the habit. Other conditions, which it is the purpose of this book to describe, may be necessary before any extension of the habit can take place. When these conditions have been ascertained, we shall still find that the word 'generalized', as applied to habit, is quite misleading.

It has been necessary to meet and discuss the above difficulty before proceeding with the main problem. Our investigations appear to have demonstrated the fact that no *general* training or discipline of the memory takes place, and we cannot allow those upholding a contrary view to retire from the field of 'the common element' and make another stand upon the ground of the 'generalized habit', a phrase which, while it has at first sight the support of common sense and customary usage, carries us no further forward in explaining the training process than does the theory of the common element. It cannot be too clearly understood that the word 'habit' can only connote a *specific*, acquired reaction to a specific stimulus; that unless the particular stimulus or the idea of it is present, the specific habit

[1] Horne, *The Psychological Principles of Education* (The Macmillan Co.), p. 75.

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will not function. The important pedagogic question for us is therefore the following: What are the conditions under which a highly specialized mental process thus becomes serviceable in other directions? In other words, what principles can be formulated by which a teacher may regulate his methods so as to secure the greatest amount of 'overflow' of the effects? For example, we wish to know how he should, in or after using the method of teaching best adapted to the particular subject, make his teaching of widest application to other subjects. We may suppose that he has succeeded in obtaining arithmetical accuracy; what can he further do to get this accuracy carried over into science which he does not teach, into manual training work where, maybe, it is not insisted on, or into such a home duty as shopping? Are there any means by which the formation of the habits of accurate speech, accuracy in dealing with historical and geographical data, and accuracy in an infinity of other details, may be aided or strengthened through the training received in the arithmetic lesson? Can this training be made in any way operative in other domains of life?

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CHAPTER V

THE THEORY OF CONCEPTS OF METHOD AND IDEALS

THE perception of similarity presupposes a certain degree of conceiving power, of power of abstraction. This capacity is not confined to the adult mind, but is also a characteristic of the child. In teaching we are constantly assuming that the very young pupil is capable of perceiving and utilizing the similarity of two methods; as, for example, when he studies one day a dandelion and another a daisy, and perceives a relationship between them, or when he discovers that neatness is as necessary in the working of arithmetic as in the writing lesson. The psychologist and educationist are constantly reminding us that the child has not yet reached the conceptual stage, and that he is still almost exclusively interested in the concrete. It is true that generally the danger lies in expecting conceptual activity of a high order too early, as in the attempt to teach grammar before the child is able to grapple with the abstractions involved. What we need to remember in our teaching is that, in a child, concepts are often replaced by mere words; or are inexact, or too hastily, carelessly, and illogically formed; and that they are much less abstract and free from imagery than in later mental life. In so far as they are nearer the concrete, or, as Professor James

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might have said, in so far as the concrete fringe is much more in evidence, the concepts are much less wieldy, much less capable of application. Confirmation of this is to be found in the discovery which every teacher makes that children generalize from very few instances, as, for example, when they imagine the climate of all countries in the same latitude to be similar, or when in history they attribute the same motives to two individuals performing similar actions. The fact that they form judgements in this quick and inconsequential way means that the actual concrete facts from which these judgements are drawn are still dimly present as a fringe, impeding the free application of the general notion to other partly similar and partly dissimilar matter. With these limitations, then, the teacher may assume, even with children of elementary school age, the power to form simple concepts.

Assuming that our inferences with regard to the impossibility of a truly generalized habit are correct; that the mere practice of one function may in itself give no increased power in another direction, and that the common element is sometimes made use of and sometimes not; *we are compelled to seek in the child's growing powers of abstract thought or conception the explanation of those cases where a transfer of power takes place.*

In the first place the child may consciously perceive the partial identity or similarity of two processes. When he sees that up to a certain point a new situation can be faced in the same way as a familiar situation,

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then transfer takes place. The introspections of our adult observers confirm this assumption. They all assert, for instance, that they found the element of rhythm in the memorizing of nonsense syllables of fundamental importance, and that they consciously made use of it in certain other directions. Again, in practising those tables which did not lend themselves to rhythmic repetition, they were able to develop the power to visualize the figures and apply this power to another subject-matter. By a process of abstraction they focused in attention the element of method, and were therefore able to make use of rhythm in the one case and of imagery of a particular kind in the other, with new material.

In the second place the child may make use of partial identity or similarity without being aware of it. It will be remembered that in our tests the children were unable to perceive in what their method consisted. They succeeded in a few tests in improving a power through *indirect* practice, but they had no idea by what means this had been brought about. This is no unknown or even strange phenomenon; it is a commonplace in our teaching experience to find pupils able to reach the answer to a certain problem without having any idea of how they reached that answer. And the difficulty experienced by a child in explaining a process is not merely due to inability to express his ideas, nor even to the lack of introspective power. The mental life of the adult often exhibits the same feature. Many of our most important

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principles are the outcome of processes of subconscious inference. The great majority of civilized mankind does not consciously reason out either its political or its religious creeds. We constantly find that the temporary turmoil produced by the presence of opposing ideas has disappeared and harmony reigns again —not through a process of conscious reasoning, but in a way that defies all attempts at analysis. Analogies of which we have no recollection, similes as evanescent as clouds, associations and logical sequences,—all have had their being for an instant in the whirlpool of consciousness or the quiet depths of subconsciousness, and have then disappeared. Moreover, many of these subconscious inferences are logically good, or at any rate good enough to be of use in solving the ordinary problems of life. The intuitions of genius are generally of higher value than the conscious logic of a common mind. We are, therefore, stating nothing but a well-known truth when we assert that a general notion of the method employed in performing a piece of mental work may arise in our minds and be used upon some other subject-matter without our being aware of the fact, the presence of the general notion being betrayed only by the appearance of an improved specific power.

There are some results of training which have been wrongly regarded as instances of transfer. When a simple dance step has been thoroughly mastered, and then is made to form part of a series, or when a conjurer combines in a sequence several tricks, it

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is complication and not transfer which takes place. When a boy skilfully applies his knowledge of school arithmetic to a technical branch of business, transfer of power is evidently occurring; but when, in any new arithmetical procedure he makes ordinary use of the four simple rules, it would be incorrect to say that his power of working these simple rules is in any way extended. The explanation of these cases seems to lie in the fact that the practised exercise is taken over *as a whole* into a new operation. There is therefore no need for any act of analysis; there is no discovery of common elements, and therefore no question of transfer.

There appear, therefore, to be two types of response to training. Sometimes the principle underlying the method of procedure is consciously reached, and thus made capable of application to another and in some respects similar piece of work; sometimes such a principle of method is reached, retained, and made use of without any awareness on the part of the person concerned.

It will be remembered that in our experiments the pupils were left entirely to themselves—that is to say, no suggestions were made to them by any one as to the means of making the practice effective; so that the possibility of transfer depended upon the type of mind and the amount of thought brought to bear upon the work. Under these conditions there is perhaps little cause for wonder that the effects of self-training were so small. But the best method of

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experimenting is by no means the best method of teaching. It is evident that part of the teacher's function will consist in doing what he can to augment the effects of practice by helping his pupils to focus attention upon their methods of procedure, and in general upon the means to be adopted in order to get the greatest value from school training. He dare not leave anything to such flimsy chance as would seem to rule in the use of common elements. He must seek, not only to bring such common elements as his pupils have failed to make use of, to their attention; but to do the same for those which they have used only mechanically or unreflectively. Instead of trusting to the formal training power supposed to be inherent in a given subject, we shall be forced to direct all our efforts to the building up of general ideas of method of a kind which will admit of wide application. Instead, for example, of teaching arithmetic in the blind belief that it *must* do great things for the reasoning power in general, we shall endeavour with all our might to get out of it some general ideas of logical sequence and others which may be applicable to other branches of study and to the actual situations of life. Absorption in one field of study often leads to extremely narrow views of life—a fault which the most enthusiastic and gifted teachers of special subjects have not only failed to remove, but have accentuated. Instead, therefore, of regarding certain subject-matter as a gymnastic, we shall emphasize the training function of the teacher and

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see in him one who not only possesses a real knowledge of his own subject and of life in general, but who understands the mental processes of his pupils, and is able to use this knowledge to the full, and *to get from any given subject the greatest amount of training possible.* We shall no longer be able to measure a teacher's success by the distance his scholars have traversed in a subject, but by their width of view and the range of application to life of which this subject has been made capable. Continued blind trust in the inherent training qualities of any school subject can only lead to disappointment.

We must now examine with a little more care those general notions of method which seem to occupy such an important place in the training process. The custom of writers upon this subject, and especially of American writers, has sanctioned the expression, 'concept of method;' and as this phrase is also technically correct, we shall follow the example of these writers, and generally refer to the mental result of reflection upon our methods as 'concepts of method'.

It is first necessary to distinguish clearly between concepts or general ideas of the principles which are part and parcel of each distinct science, and those which we have agreed to call 'concepts of method'. The former are not concepts of *method* at all, but concepts of the *matter*, ideas of scientific principles evolved direct from the subject-matter, and belonging always and solely to particular groups of facts—

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'subject-matter concepts' we might call them. In this sense we speak of 'Boyle's law' as a principle of physical science; or of 'Grimm's law' as a principle of philology. The true concept of method, while it is, in the early stages of its formation, attached to and strongly coloured by the subject-matter amid which it arises, is capable, in its later and more abstract stages, of complete detachment from this subject-matter, and can exist in entire independence of it. The difference between the two types of concepts may become clearer if the reader will contrast the idea of the principle upon which simple interest is calculated with that of accuracy or of logical sequence.

Concepts of method are of many and very different kinds. The reader will probably already have noticed a certain apparent incongruity in the examples of concepts of method given in this chapter. He will have seen with something of a shock of surprise concepts of the methods of memorizing mentioned in close proximity with concepts of neatness, cleanliness, and accuracy, and these again with those of obedience, duty, patriotism, and honesty. The placing together of such diverse types is doubtless confusing. Nevertheless, in any adequate account of the training process they must all be considered. A rough classification of the entire group of concepts will perhaps be conducive to clearness.

1. There are what we may call 'purely intellectual concepts', such as concepts of our methods of memorizing, of our modes of observation, of our methods of

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judging and reasoning. The latter generalizations will consist of those to be found in any book on logic, but in the school they will take a form suited to the type of child dealt with. Rough generalizations they may be, but of supreme importance to life. Weighing of data, sequential procedure, demand for proof, search for analogy, methods of induction, are a few instances of these general principles. Of course, no one asks for any knowledge of logic from elementary school children, but it is not unreasonable to expect that the germs of such ideas should be implanted.

We distinguish this class of concepts as purely intellectual; that is to say, the teacher has to do no more than render them *comprehensible* to the children. Their necessity to thought and practice must be demonstrated on lines presently to be indicated.

2. Another class might be termed the 'quasi-ideals'. As typical examples we may take accuracy, cleanliness, neatness in work and person. In this class, again, clear comprehension is an essential factor. On the other hand, we can discover the presence of another element, that of an accompanying emotion. In training for such ends, mere comprehension is not sufficient. I cannot feel sure that a lad has been cured of untidiness unless I observe that he finds some satisfaction in contemplating examples of neatness. I can have little confidence that his idea of cleanliness will be applied outside school or in my absence, unless I know that he admires the quality.

3. A third class would consist of the 'pure ideals',

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such as obedience, duty, patriotism, *esprit de corps*, self-sacrifice, honesty. The emotional accompaniment plays here a far greater rôle; it is, I think, clear that mere comprehension can do little to help in the formation of such concepts. Only the *feeling* of their worth can lead to practical and wide-reaching effects. Concrete examples of the teacher's own conduct, noted by a class apparently absorbed in other matters; examples from fiction, biography, and history, not culled for ethical purposes, but occurring in the ordinary course of school reading, not pointed out and commented upon *ad nauseam*, but presented in a living way, either in a literary masterpiece or in the teacher's feebler speech penetrated with sincerity and feeling,—these are means of imparting such ideals. Unfortunately, the school, particularly the primary school as at present organized, furnishes few opportunities for the application of such principles. Moreover, what co-operative life exists, often ceases as soon as the child has finished morning or afternoon lessons. This is particularly the case with the girls, who are but seldom associated in outside sports. The teacher who has time and opportunity to take part in the games has numerous chances of securing what must be made to appear voluntary application of these ideals. In school, too, suggestion plays an important part in securing the practice necessary; mutual services, co-operative work, an atmosphere of freedom and reasonableness, an at-homeness, will all help to provide the necessary opportunities.

Bagley has, I think, committed an error in including

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under 'ideals' all three of the classes just enumerated. He says of them: 'An ideal is a type of condensed experience. It is the upshot of a multitude of reactions and adjustments, both individual and racial. . . . Because it is a type of condensed experience, it is commonly formulated as a proposition, or conceptual judgement. For example, "All men are created free and equal"; "The greatest good of the greatest number is the standard of conduct", &c. Or it may be attached to a single word, such as "honour", "chastity", "truth", "patriotism", and the like. . . . As a condensed experience it functions in the process of judgement. It serves as a conscious guide to conduct, especially in novel and critical situations. It functions in the initiation of specific habits, and such habits once formed may be said to harmonize with the ideal; but ideals themselves do not function as habit, although the judgements that are based upon them may often be of the "intuitive" type. . . . The development of an ideal is both an emotional and an intellectual process, but the emotional element is by far the more important.'[1]

The writer seems to use the term 'ideal' in a very extended and unusual sense, and this use of it tends to obscure the very important difference between pure ideals and intellectual concepts of method—important because it necessitates the employment of a very different method when seeking to develop them. To develop concepts of the intellectual type,

[1] Bagley, *The Educative Process*, pp. 222–3.

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of which Bagley in the above quotations gives no example, but with which school work abounds, appeal must be made directly to the intelligence; any intelligent teacher can succeed here if sufficiently patient. But to inculcate ideals, to stir the emotions without arousing the spirit of combativeness or pugnacity; to touch the finer chords of feeling without jarring or relaxing them; and finally, to conduct oneself so as to serve as a concrete ideal—this is another and a very different task.

Heck, to whose work the present writer is under great obligation, seems to go to the opposite extreme. He says: 'Concepts of method should be associated with sufficient emotional valuation and impulsion to make them effective in practice. But all voluntary acts need to be directly or indirectly motived by the emotions; the necessity is general, and needs no special emphasis here. The stress put by Bagley upon the emotional element as by far the more important in his "ideals", shows that he is thinking especially of those concepts of method for the application of which great emotional motivation is needed, as, for example, the general concept of how to be courteous to those we dislike or of how to deny ourselves in social service. But there are a large number of concepts of method for the application of which little emotional motivation is needed, as, for example, the general concept of how to test the logical steps in an argument or of how to sift source material.'[1]

[1] Heck, *Mental Discipline and Educational Values*, p. 147.

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Before continuing the quotation, it seems necessary to point out that two quite different concepts can arise here, viz. that of the general method of testing the logical steps, and also that of the duty or necessity, or perhaps usefulness, of doing this. These two concepts are quite good types of the first two classes I have indicated. In the first there is certainly no need for any emotional motivation; in the second, there may very well be some. The second concept mentioned by Heck here is just as important as the first. But to proceed with his argument—'Furthermore, emotions generally centre around the object in view, the subject-matter, rather than the method; it is *what* we should do, not *how* we should do it, that is usually the centre of our emotional struggle. But the general concepts to be derived from specific training are those of method, over and above subject-matter. Of course, the method can be made an end of action, not a means, and we may like it or dislike it; but it has then been misplaced and misvalued. Its real value is to guide in the doing of what we have decided to do, after such motivation and choice as the situation demands.' [1]

It is difficult to understand why Heck, of such set purpose, thus excludes the ideals from his list of concepts. Surely the ideals of duty, temperance, and chastity are concepts of method, methods of responding to certain definite stimuli. Omitting, as he appears to do, all the concepts which we are here calling 'ideals',

[1] Ibid., p. 147.

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he naturally sees no place for any distinction so far as emotion is concerned ; and Bagley, on the other hand, sees an important emotional accompaniment in every concept of method. He replies to Heck's argument as follows: 'The concepts of scientific method, for example, can be more readily transferred from the high school laboratory to the situations of later life if the pupil has a strongly emotionalized *belief* that the scientific method is really " worth while ". Merely recognizing from the point of view of intellect that the scientific method involves unprejudiced observation and careful induction is one thing ; *feeling* the worth of this method as the best known means of attaining truth is quite another.' [1]

The chief difference between these two authors disappears the moment we see that there are two different kinds of concepts, viz. (1) that of the intellectual methods of observation and induction, and (2) that of their value ; the former having no particular need of emotional motive, the latter being useless without it.

The examples quoted by Heck all come under the class of intellectual concepts. Let us take, however, from our own last two classes two cases, namely, accuracy and temperance, and we shall note first that the question of the ' how ' is generally less important than the idea of its value ; the ' how ' has often been mastered quite early ; it is rather the concept of the value plus the emotional impulse, upon which action

[1] Quoted by Heck, p. 148.

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depends. The importance of this emotional element overshadows all else. Many a child has acquired the knowledge of the methods and technical devices necessary to a piece of observational, analytical, or sequential work, but has never realized the *value* of such methods or the duty of constantly applying them. Many a child knows *how* to apply the notion of accuracy, but has no conception of its necessity. And many a child is neither neat nor clean, although he possesses a clear idea of *how* to become so. On the other hand, in many other concepts—for example, how best to memorize poetry or how to expose an arithmetical fallacy—the *how* so overshadows the whole process that we see nothing else. If I understand the same author correctly, he rarely makes use of any really general concept, one capable of application to life as a whole. He says: 'These concepts may be held in the mind in one or more sentences, in a single phrase or a single word, in a metaphor or a line of poetry or some traditional maxim, *in a formula of mathematics or chemistry or engineering*.[1] The last examples seem to indicate concepts drawn from and applied to the *facts of some one particular science*, and not those which we have called *concepts of method*. And if, as he repeatedly says, the general notions with which he is dealing are all strictly concepts of method—that is, in his meaning, general ideas of *how* to perform the particular tasks—then the concepts embodied in his metaphors, lines of poetry and

[1] Ibid., p. 139.

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traditional maxims, must be all of a lower and more limited kind than one could wish, suggesting mere tricks or careful technique for the manipulation of difficult situations rather than appealing both to our intelligence *and emotions*. The school must educate in the formation of resolutions through ideals as well as in the ways and means of coping with given situations. The author concludes : ' In all cases the symbol stands for a *method of activity*, be it in the realms of pure or applied natural science, of social science or practical civics, of business or professional life, of personal manner or social relations. The mind stores up by means of this symbol the rules and directions to guide its activity in adjustment to those phases of the environment to which such an activity seems applicable.' [1] In other words, his ' concepts of method ' consist partly of actual principles or laws of science, partly of intellectual method concepts, and never of those concepts known as ' ideals '.

It will now be necessary to ascertain the procedure the teacher must follow in order to extract that real training which we have seen comes so rarely of itself. In order to obtain a clear point of view we will first briefly analyse the more familiar method adopted in leading our pupils to the conception of a new scientific principle. Take, for example, a new rule in arithmetic. It should be noted that the induction arrived at in the form of the new rule is, as we have previously shown, of

[1] Ibid., p. 139.

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quite a different type from that which we have called a 'concept of method', and is introduced only for the purpose of illustrating the method of developing the latter.

1. In beginning to lead the way to a new rule in arithmetic, the teacher may give a number of easy examples to which the pupils can readily find a solution. Whether it is a first lesson upon fractions, or upon simple interest, or upon proportion, his general procedure may be the same. This type of work he continues till the whole class has acquired what is practically a new habit—the manipulation of very easy problems of a new type.

2. On this basis the teacher begins to make the child aware of the elements of the method of solution. As already noted, the child is often quite unaware of the steps he has followed in a process of thought; but for the purpose of rendering such a process perfectly clear, and useful in elucidating other problems, it must come into the focus of attention. All the stages intermediary between partial and full awareness of the method followed must be treated in the same way. This, however, should not be understood as meaning that every habit is to be analysed into its elements. That would be to extend the meaning of 'training' unwarrantably. Nothing is to be gained by doing this too frequently or too early. In the case we are here assuming, the immediate necessity is evident. The child is made conscious, or, to speak more correctly, becomes conscious of *how* he solved the particular problems. It

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may be that he will require to solve many such problems before he is able to obtain a glimpse of his own method; for it is frequently impossible, except by means of numerous repetitions of the actual performance, to lay stress on the feature which is common to them all, and thus to make that feature stand out more plainly from the other dissimilar elements.

3. So far the teacher's procedure has been tentative and the child's groping. The teacher has been occupied in seeking for some basis upon which to build; in trying to create some need in the child's mind for an intelligent concept or general idea. The child's method may be circuitous or even inaccurate. After the first faint glimmering of the idea of common method has been reached, further examples must be given. Just as we read a book straight through before seriously studying it—just as such a procedure is necessary for obtaining a point of view, for getting the general tendency or drift, in order that many of the difficulties involved in a first reading may readily vanish with another perusal—so it is that now, after the first general view, the child may begin to form a more exact conception of the method he has been using and will have to use. The teacher must therefore now begin again with other examples, leading the child along a more closely-reasoned argument to the exact idea of the method. If this very important step is necessary in the formulation of an elementary rule, it must become of still greater necessity where a new rule is based upon others previously developed; the necessity

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increases the more complicated the steps in the process become.

4. Even after careful teaching of this kind has been given, the idea of the rule is generally still capable of further clarification. Perfect clearness is only to be reached by means of deductive work, or, in plain language, by applying the new arithmetical principle to many and varied cases. The more the teacher varies at this stage the problems which the rule may be used to solve, the broader the conception of its significance becomes and the deeper the impression it makes upon the pupil's mind.

Coming now to our own problem, as to how true intellectual concepts of method and ideals arise and develop—we have first to note that the teacher, while engaged in developing strictly mathematical principles in the way very incompletely described, has to keep other and more general aims before himself. He has, in fact, to exercise the functions of a trainer.

It is uncertain whether any improvement ever does or can take place in, for example, the inborn mathematical reasoning power or in the innate power to memorize certain material. The solution of such a problem would be interesting, but of no intrinsic value to education. We are at all events sure that there are certain specific habits accompanying the study of arithmetic or the memorizing of particular material which will, if cultivated, give a far greater facility in these directions.

For example, in memorizing particular kinds of

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material, certain conditions—a helpful bodily attitude, the appropriate distribution of attention, the general use of a particular rhythm and arrangement of pauses, the suitable number of repetitions to be undertaken at a sitting—will, if known and adhered to, greatly conduce to effective work. So it is with any given school subject. In teaching arithmetic there is a general method of approaching a problem which spells success; there is a system of organizing the paper work which conduces to logical thought; there is a habit of accuracy in dealing with numbers which also contributes its share to successful results. It is to these points, over and above the method of reaching a particular mathematical rule or principle, that the teacher must constantly give attention.

Let us for a moment deal with one of these accompaniments of specific studies, taking as an example, the general method of approaching a mathematical problem. A young teacher, we will suppose, writes a problem upon the blackboard and perhaps reads it to the class. After a few questions upon the method of solution, he may discover that many scholars are not familiar with the data. It is therefore palpably unwise and unfair to expect any attempt to solve the problem. No problem of this nature can be solved, nor its solution even attempted, until every child is thoroughly acquainted with the facts as stated, and generally so closely acquainted that the visual imagination plays a considerable rôle in the presentation of the problem in his mind. Many teachers do insist upon this pro-

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cedure; others frequently content themselves with demanding what the specific question is, expecting some such answer as 'How many *men*?' or 'What *time* will it take?' This is insufficient. We must insist upon a kind of memorization or visualization of the problem, upon getting the clearest possible idea of the data. We must teach the children to observe the facts carefully, and thus make themselves independent of the written statement. Now if this is constantly and laboriously insisted upon by the teacher, a specific habit may be formed which may function in all situations involving mathematical processes. And this habit consists in approaching such situations with a maximum regard for the data—a most simple and natural precaution woven into the common procedure of the adult mathematician, but unknown to the young traveller along the same road.

Another piece of technique in the same study, which through tireless repetition should become a specific habit, consists in the orderly arrangement of the logical steps. A generous use of paper which allows a line for each new sequence and wide spaces between the steps, thus enabling the eye to come to the aid of the judgement, may seem an insignificant detail having no connexion with the power to solve arithmetical problems; but the wise teacher secures its assistance. And what can be said as to the specific habit of arithmetical accuracy? It is clearly a special kind of accuracy, different from the accuracy of language or of historical inference; it is an ideal of perfection, and it

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is here only necessary to indicate that while it is in the school as easy to over-stress as to under-emphasize its importance, it is nevertheless a valuable factor in arousing and sustaining the pupil's interest in this kind of work. Moreover, its necessary connexion with practical work is obvious.

In arithmetic, therefore, we find that, in addition to the formation of concepts of arithmetical principles, it is possible, by means of teaching of the most laborious and persistent kind, to lead a class of pupils to form habits of arithmetical accuracy, of arithmetical organization, and of a special kind of attention to arithmetical data.

The same is true for each individual subject of the curriculum. History, geography, and literature, and every science, have their own appropriate habits of study, varying within certain limits according to the idiosyncrasies of the individual. The teacher's duty consists in discovering what those habits of study are, taking into consideration the nature of the subject studied, the nature of each pupil engaged in studying the particular subject, and the general principles which must govern even the most individual and original methods of work. At first sight it would appear that the considerations mentioned must complicate the teacher's problem immensely; but when it is remembered that the same habits of studying one particular branch of knowledge are common to almost every one, and that the range of original methods must be extremely small, the difficulty almost vanishes. It is

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only necessary to avoid roughly overriding individual methods and forcing alien ones upon exceptional pupils. All else is plain but laborious sailing. Experience has long since demonstrated in most cases the most economic and successful methods of pursuing different studies, and it is here that the greater part of the teacher's work lies. He has to see that in every school subject these economic habits are formed in such a way that each pupil may for each subject fall readily into the appropriate habits of study.

As we have already noted, habit is by no means the end of the training process; it is only the first step. There come favourable moments when our pupils may win glimpses of the *grounds* of such habits, when they may be made conscious of their habitual methods and also of the *elements* composing them. Such ideas dawn slowly, and are not to be communicated as we often may communicate a straightforward fact; the child's attention can only very gradually be brought to a focus upon his own methods of work. When it *is* done, a concept of method has been reached. Recalling the analysis previously made of the process by which the child forms a concept of some scientific principle, we may observe a very close similarity between that process and the one now under consideration. The former procedure ought probably to resemble the latter more closely still, by being led up to much more slowly than the teacher usually thinks proper.

What concerns us here more particularly is the fact that real training must include not only literary,

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historical, and other generalizations of and from the subject-matter, but, in addition, concepts of method the formation of which is rendered possible because certain habits or methods of work have been insisted on. We are anxious, for example, that our pupils shall continue, after school life is over, to read good poetry; but this desideratum will seldom be realized unless the teacher, by his method of treatment, has interested them; unless he has afforded them many opportunities of reading and studying poetry by methods similar to his own; unless the scholars themselves know how to become at home with a new poem, or, in other words, unless they possess concepts of method for dealing with such matter. The young linguist, too, is first made to adopt certain methods of study; he then acquires general ideas as to procedure and applies these to each new piece of language work. Students of history have again their particular habits of work suited to that particular study only, from which by slow degrees they evolve concepts for application to every piece of new work of an historical kind that they take up.

The transfer or overflow of power has, it will be noted, so far occurred merely from one part of a particular subject to other parts of the same subject. This is a result not to be despised. To secure it, a teacher must be not only skilful but unremitting in his work. If he has succeeded in cultivating the power to approach and tackle simple arithmetical, historical, geographical, and scientific problems with intelligence, so far as they are contained within the limits of the school curriculum,

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then he has done much ; he has deserved the name of 'educator', although so far not in the highest sense.

Such teaching might result in producing a compartmental mind. Each school subject would be separated from all the others in a way which would act very disadvantageously in the practical life of the child, where situations demanding solution follow each other in bewildering fashion, unlabelled with the name of the particular branch of knowledge or aptitudes to which they each belong. Life itself does not consist of purely arithmetical or historical or grammatical problems, but frequently, and indeed most often, exhibits a puzzling combination of all kinds of subjects. The young clerk must often throw a mathematical statement into letter form ; in deliberating as to the best means of investing a small amount of savings, a large number of problems other than arithmetical enter ; the decision as to how to cast a vote may involve much more than purely historical knowledge ; and the young father or mother stands faced with a form of puzzle to which no part of the school curriculum can afford a direct clue. Indeed, much of life must always remain outside the school. Hitherto we have imagined the difficulty overcome by positing the development of imaginary faculties which, sharpened on the school subjects, should enable the child to deal with any and every situation of life ; but this easy belief has now been discarded. We can no longer trust even to the unconscious development of generalized habits, which we have found to be nothing more than specific habits of a somewhat wide range.

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We must instead put all our confidence in, and direct all our energies towards, the difficult work of the formation of ever-widening and more abstract concepts of method—concepts which embrace methods capable of application not merely to one branch of study, but to many, and sometimes to all. This work of real training has little in common with that of repeating a few similar situations and unconsciously extending the habituation, but is one which is only carried on by means of the most careful reflection and judgement.

It is useless to shut one's eyes to the fact that very few adults give proof of possessing these wider concepts. It is difficult to find a person accurate in many varied domains, temperate in all things, observant in all directions, or brave in all situations. Where we have seen accuracy, temperance, or courage function, there we may be right in expecting their repetition *in similar circumstances*; but our expectation will run greater and greater risk of disappointment the more the new situation differs from those in which we have seen these qualities function. Men who have had a university training sometimes miss these generalizations; the youth who leaves the secondary school or technical institute at 18 or 20 has often failed to make them; the children who have finished their education at 14, and who form four-fifths of the nation, have infinitely little chance of attaining such complete and wide concepts. Nothing can be more disappointing to the thoughtful teacher than the discovery that a concept such as temperance, or justice, or accuracy, which

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he supposed he had made perfectly clear in its most general sense, is understood in a limited and indeed narrow way. This failure, observable in all grades of education, is in reality nothing new, although the optimism of educators and too frequently their ignorance of easily ascertainable data have tended to obscure the fact. If it be admitted that true education and culture consist in the gradual subjection of life to general principles, there can be no error in assigning a chief place to concepts of the kind mentioned, nor in crediting the immense difficulty of the pupil's and the teacher's task. As soon as the *necessity* of this work is fairly faced, as soon as the old doctrine of formal discipline is dropped, which made the matter appear marvellously easy, there is some chance of success. The experience of every teacher will have demonstrated how difficult it is to lead a child to seize a general notion with reference to only one of the school subjects ; analogy and facts prove how stupendous is the task of leading whole classes of children, who will receive no further formal education after fourteen years of age, to form the more abstract notions which are to enable them to face with hope of an approximate solution the varied and complicated situations of life, for many of which the school can furnish no examples.

Correlation is one attempt to meet the difficulty. It serves two purposes. Sometimes, as when history and geography or history and literature are correlated, the idea is to present the situation in a setting which is more in accord with reality ; and sometimes, as when

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drawing and modelling or needlework are correlated, to make it easier for the child to form a general principle of method, and apply it to similar problems. If the now fashionable method of correlating is used to satisfy either of these educational principles, and is not carried on in such a way as to interfere with principles equally or more fundamental, for example, those of 'concentration' and 'interest', then it is fulfilling an extremely useful function. But when it is used like a quack medicine to cure all ills, overthrowing the natural boundaries between branches of knowledge in the belief that it is going to introduce an educational golden age, in which the pupils learn something of everything, it is exceedingly harmful. We shall therefore find it necessary to examine the principle of method of which correlation is merely one form of application.

The concepts of accuracy, of close examination of data, of logical thought and arrangement, of quickness in manipulating figures, so long as they remain associated or fringed in thought with figures, are inapplicable to other material; they are of but little more value than the specific habits from which reflection produces the concepts. It is when the child begins to get a glimpse of their true abstractness; when he can form an idea of accuracy and of its value apart from arithmetic or any particular subject; of observation of data, of thought sequence and quickness, apart from the subject-matter out of which they first came into being, that it becomes possible to apply the general notions widely, both inside and outside the school.

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How may this be done? The teacher must first by insistence and encouragement, or severity, obtain, say, the quality of accuracy in mathematical work. Then he must see that it is equally insisted upon in each of the other subjects, and in all departments of the school routine. He must allow no exceptions. This thoroughness is not always attained. Sometimes the teacher has a favourite subject to which he unconsciously sacrifices the others; frequently, owing to the use of specialists, the class teacher can only guess how matters are going with other branches of the work. Where neither of these disadvantages exists his procedure is plain. It might perhaps be possible by resolutely insisting merely upon the *habit* and by permitting no exceptions, to lead the class to a *conception* of this as a general principle governing all kinds of work; for we know that a common element is more likely to be noticed when it stands among groups of elements otherwise dissimilar; contrast assists in its discovery. It behoves us, however, to leave nothing to chance. Realizing the importance of this widening of the concepts, the teacher will make it an essential and characteristic part of his function to render obvious the often hidden relations between all parts of the school work. Besides demonstrating the ordinary concepts of science, he will, by unremitting insistence upon the corresponding habits peculiar to the study of the individual school subjects, by careful suggestion, by a perfectly fair treatment of all the school studies and occupations, and a presentation which skilfully lays

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bare the common elements underlying all good work, do something to give his pupils some glimpse of the unity and uniformity of life, some glimpse of the principles which may be made to regulate its work and conduct. Where the method of one subject is applicable to another, he must point it out and demonstrate its utility. For example, the organization of ideas and the clearness of style which he has laboured to produce in the work of English composition should not be confined as specific habits to this exercise. They must be demonstrated and clearly conceived necessities in other parts of the school life, so that letter-writing, note-making, verbal description, conversation, oral questions and answers, oral summaries of lessons, and every kindred exercise may exhibit the regulating power of such generalizations. It is just possible that some of these concepts, such as industry or honesty, may become sufficiently abstract to embrace all departments of school work—arithmetic, drawing, and even physical exercises. It is perhaps unnecessary to remark that this consummation is very rarely reached.

It might still be doubted, the teacher seeing to it that these general ideas of method are reached *in the individual subjects*, whether it is necessary to do more. Many reasons might be urged for the extension we suggest of the training process. First, the all-important one already exposed, viz. to afford the elementary child to some small extent, and the secondary school scholar to a greater degree, some view of the unity which underlies all life and its activities. The vaguest

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idea of this kind can do something to increase the sense of individuality and give continuity to the mental life. Second, because only by so doing can the concepts drawn from the methods of dealing with the *single* subjects be made perfectly clear. It is only by coming in contact with the idea, say, of justice, amidst the most diverse concrete surroundings, that we form a true idea of any single just act. And thirdly, school at the best is a very inadequate mirror of life, and often presents comparatively few situations typical of real life; if, therefore, we should fail to unify the diverse sides of school life by means of conceptual judgements, it would be foolish to expect the much larger unity to be formed —the concepts which shall regulate the whole of life. A good specific habit is one of the greatest gifts a teacher can confer upon a child. A notion of its value to some one or more phases of life is more valuable still; but beyond both of these is the perception of the value of a truly *general* notion, such as industry, accuracy, duty, as applicable to all kinds of work.

We have reached the last stage in the training process. This consists in the *application* of the concepts we have taken so much trouble to develop. The teacher must now give opportunity for the application of the particular principle of method in the subject from which it was drawn and in others where it is equally applicable. For example, the principle of close examination of data, evolved from the lessons upon arithmetical problems, must find application in every such lesson; no exception may be allowed. Every

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other lesson or part of lesson in which this method of approach is valuable must be used to apply the same principle. It is said that practice makes perfect; but some of us would be content to fall a little short of perfection if we might omit the practice. But we know now that practice in a particular art is the only means by which we attain any power in it, however small. Most people would rather trust themselves in the hands of the veteran doctor than in those of a beginner, however profound his theoretical knowledge. The concepts obtained through study alone and in a limited period of 'walking the hospital' are very different indeed from those formed as the result of a long experience and applied to a wide diversity of cases. Among teachers it is too often a matter of complaint that their work is assessed by theorists—that is, by men who from very limited experience have formed theoretically true and no doubt valuable general principles which they have seldom or never applied in practice. No man can be considered capable of advising in any art unless he has embodied his principles in a great deal of practical work. Again, to take our example from the school work, a scholar may have a tolerably clear understanding of the rules of English syntax, evolved through the careful teaching of composition; but he will none the less need considerable practice in applying these principles in the office before he can write a good business letter. In school, as in life, we cannot assume that any specific skill or habit has been acquired until we have seen the habit actually

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function, until the principle which the teacher has gradually brought to light has had ample application in the new direction.

This conclusion appears to find support from many directions. Common experience is constantly demonstrating the distinction between theory and practice, concept and application. Moreover, the attempt to apply a notion leads either to a modification of the notion or to a deeper and clearer comprehension of it. Pedagogically, the value of this truth is only now beginning to obtain recognition ; in a short time it will have become a commonplace of educational theory and perhaps of educational practice. The late Professor James laid great stress upon this peculiar feature of the mental life ; Bagley bases a great deal of his able work upon the same fundamental idea ; indeed many writers, particularly and appropriately American, are emphasizing the same truth. The schools have felt its influence ; we are all demanding that the child's tendencies to activity of body shall be given fair play—not altogether because we regard these activities as essential to health and bodily vigour, but because we know that movements of all kinds made as responses to some idea struggling to find its appropriate concrete form are the means by which thought is clarified. If this is true, it follows without further appeal to experience, that each concept requires for its maintenance and growth continual application ; the abstract must be continually transformed into the concrete.

It is impossible to insist too strongly that the same

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holds good in the case of the pure ideals, such as obedience, duty, self-sacrifice. The essence of the training process consists less in the idea than in the actual performance ; the principle or ideal can only be kept alive by constant application of it. The formation of ideals will almost certainly prove to be a useful process, but without constant application is none the less incomplete.

From what has been said relating to the formation of concepts of method and their dependence upon the perception of common elements, it is clear that there are certain types of mind which possess great advantages in the process of training. The mind that readily perceives certain types of similarity will more quickly be in a position to benefit by the training. Of course if such power to discover similarity were a 'faculty' in the old sense, then we should expect to find the most successful subjects for training among those who give striking proofs in one particular direction of its presence, as, for example, poets. We know, however, that as a rule their genius for discovering similarity is of a limited kind, functioning best among poetical similes and metaphors, and exhibiting rather less power of this kind in other directions. The adult, by means of his greater conceptual power and superior knowledge, possesses great advantages over the child. To reach a concept of method he has no need to perform a number of specific activities himself. He may observe others carry them out and by means of reflection extract the general principle involved. Or he may first

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perform certain operations; then through observation and reflection gain the idea of the general method involved; and finally think out other tasks the processes of which must fall under the same principle. This can, of course, take place to a far less extent with the child, since his stock of ideas about the various activities of life is much smaller than that of the adult. The latter can not only anticipate many of the situations and problems of life, but can also prepare his methods of facing them. The child, on the other hand, is much more often surprised and startled by life's novel experiences and often has to pass through a long period of unconscious adaptation before reflective thought comes to provide him with a concept of method. It appears that the normal inexperienced child-mind needs a certain amount of time for merely accustoming itself to a new type of experience, even when a parent or teacher stands by with the ready-made explanation or principle. We must never expect to be able to follow a logical line in our teaching; a considerable time will be occupied by the children in floundering—that is, in merely getting accustomed to new surroundings. It is as if a man were suddenly pushed by members of a crowd from one to another. He is flung hither and thither in battledore and shuttlecock fashion. Surprise and loss of orientation would arise first and continue for some time. The explanations of a bystander as to why or how the strange movement arose would not be listened to. Finally, no doubt, assuming that strength endured, he would begin to speculate upon the most

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scientific means of adapting himself to the new situation. This is only an exaggerated picture of what new environments and experiences have frequently done for sections of the human race. And though in school we try to render the shock of complete novelty as small as possible, and to pass by slow degrees and connecting links to new ideas, we can never altogether remove the strangeness that makes an immediate logical attack impossible. 'Floundering time,' as we might call it, must be allowed for, and woe to the child who does not get it. His school life is indeed a burden.

Before concluding this long chapter it is perhaps worth while to emphasize three main points which our investigation has made clear. They may be regarded as warnings.

1. It is important to remember that one of the most valuable of the newer ideas concerning formal training is that which treats of practice. We learn that although the adult can form concepts of method through mere observation of the performances of others, and even through imagination of such processes, he cannot acquire *ability* in any direction without *direct practice*. There is no royal road to the acquirement of *ability*. To learn football one must play it. Theorize as much as you like, but it is impossible to do without the practice. The public schools of this country have been the training-grounds for our great administrators. Among the most important advantages they possessed was that of reflecting, in a way the public schools of no other

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nation ever did, certain typical sides of administrative life. The personal powers exercised by the older scholars, both in the games and in prefectorial rule, gave rise to concepts of government which with modifications could be applied to the government of peoples. In spite, however, of the formation of such valuable concepts, we can only guess at the years of practice and of drudgery before *ability* was finally achieved. History seldom fully records the story of its progress. A special ability is a habit, and no habit is brought to perfection except through the process of 'trial and error'. Education can help in the formation of the idea of the principle, and give opportunity for its application. But it cannot, by some judicious choice of subject-matter, bestow a power capable of blind application to some other material.

2. One of the gravest educational errors of recent years has consisted in overrating the abilities of the child of fourteen. His powers of assimilation and conceptual thought have been exaggerated. Because we find occasional instances in which some dexterity in the use of graphs or in the solution of somewhat intricate equations has been obtained, we have inferred greater powers than in reality exist. We shall therefore be quite unable at this period of life to free many concepts of method from the fringe of concrete ideas corresponding to the subject-matter from which they are drawn; for example, the concept of inductive method will nearly always be coloured by a background of mathematics or physical science, and in its wider

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and more abstract form will be beyond a child of primary school age. And the case will be the same with other general principles such as those of proof, style, historical causation. At most the child will obtain only glimpses of such principles—but none the less, very valuable glimpses.

3. In much of his early school life, the pupil not only reaches principles of method without any clear knowledge of the fact, but he is able to apply them in the same half-blind manner. School-children absorb and reflect the tone of the teacher and class, and their treatment of one another is often the outcome of subconsciously held ideals. No one with any knowledge and understanding of men and children would venture to underrate this silent absorption of principles. Nevertheless, the teacher will at the appropriate stage seek to bring the child's mind to a full consciousness of them. The first position should be the prelude to the second. To achieve the former, in the lower classes of the school, it will be sufficient to lay stress upon certain actions or processes or methods; to place numerous concrete examples of them frequently before the mind, and that in such a way as to form a solid foundation for later reflection. With such preparation progress towards the stage of abstraction will be rendered less difficult.

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CHAPTER VI

PRINCIPLES GOVERNING THE SELECTION OF MATERIAL—CONSTRUCTIVE

In the present chapter we wish to ascertain what modifying effects the newly discovered laws of mental training may have upon the principles which govern the choice of curriculum. Our investigations have shown us that habits will not function under entirely new and strange conditions, and that concepts of method, taking shape under great difficulties, seldom function during school life beyond an extremely small field. In view of this revolution of theory it may be necessary to reconsider the principles governing the selection of the material of instruction which forms the school-child's mental pabulum. Especially does this appear necessary, if we remember that the curriculum until quite recently was constructed under the illusory guidance of a principle which asserted that a faculty was sharpened or cultivated by contact with some one appropriate material. A glance at the first chapter will convince the reader that the report of the demise of this view ' has been grossly exaggerated '. If we may judge, however, less from books of method than from actual curricula—that is, less from what is said than from what is done—we may come to the conclusion that this crude optimism has ceased to exert its former power, although its utter falsity has not yet been theoretically conceded.

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Assuming that the doctrine known as 'formal discipline' is erroneous, and that the view put forward in the preceding chapter is in close correspondence with fact, it becomes important to apply the new principle to the problem of the curriculum.

It has been one of the aims of all great educators to bring the school into closer touch with life. No one can study the work of Mulcaster, Comenius, Locke, and Rousseau without being impressed by their efforts in this direction, although those efforts were not always successful. Pestalozzi, Herbart and Froebel also emphasized the necessity of making the school reflect the life of the community. In more recent times Spencer and Huxley realized the importance of the same principle; but the former assumed somewhat too dogmatically that his individual view of life was the only true one. Huxley's essays were of immense value in popularizing the principle. His influence was, however, stronger with the parents than with the schoolmasters and authorities, who, under the growing stress and demands of public opinion, have been forced to evacuate position after position until it is now possible to foresee an almost too complete surrender to these demands for a practical education. The time may have arrived when it is necessary and possible to do what was not possible in Spencer's or Huxley's days, and what is only now possible through the progress of the science of psychology on the experimental side. This task is the clear formulation of the principles governing the choice of curricula. The application of those principles in select-

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ing material suited to the particular stage of the development of our social organism and to the varying stages of individual mental growth will follow naturally. If we can only reach sound principles, the actual choice of the matter of instruction may safely be left to each generation and will vary with expanding knowledge and changing circumstances. Let us see, therefore, assuming that the exposition so far given is true, whether it is possible at this stage of psychological knowledge to enunciate any principles of value.

We have seen in the preceding exposition that a habit obtained through practice in a particular medium will only function when aroused by the same or similar stimuli; will function only in that particular medium or in some medium related through identical elements to that material which gave rise to the habit. We have also seen that it is possible (though sometimes difficult) to lead a child to form a concept of method, a concept which may be the first step in extending his particular ability in other directions where the identical elements are fewer and less prominent. In this case, the individual may begin the new work by achieving only the same results as the person without such a concept, and yet we shall observe a far greater rate of progress in him; he will need much less practice in order to make considerable improvement. The other individual may for some time not improve at all.

The school, therefore, has two functions. First, it must give the practice necessary to the formation of abilities or powers of doing certain important things,

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of performing certain specific activities. Second, it must lead the pupil to form valuable concepts and ideals which shall make possible a further extension of these powers. While recognizing that there can be no training of the 'faculties'—of judgement, observation, and others,—yet we also recognize that there are certain concepts of method, certain ideals of method of vital importance; and we cannot avoid facing the question which in a more or less complicated and possibly confused form has troubled educationists ever since the notion of 'general abilities' began to weaken, namely, as to whether there are not certain domains of knowledge and experience which contain the possibility not only of developing ideas of methods and ideals of the greatest value, but of exhibiting them in such striking and unmistakable fashion as to shorten and make easy the task of abstracting them. For example, do not Mathematics constitute the best material for use in inculcating the ideal of accuracy; is not the teaching of botany the best means of training a generally efficient observer; Latin, the subject above all others which leads to general culture and ability? If this should turn out to be true, it might be necessary to take as criterion for the choice of matter in our curricula *not the intrinsic value of the material*, but the *value of the concepts*, for example, the notions of accuracy and observation arising, it is assumed, as an inevitable result of studying mathematics and botany. It is therefore essential to face this question squarely.

To simplify the treatment of the subject, we must

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once more refer to the classification of concepts. We recognize three kinds of concepts which are based upon psychological differentiae and pass by small gradations from one to another. The ground of this difference we took to be 'feeling' or 'emotion'; thus passing from the purely intellectual concept through the quasi-ideal to the pure ideal. The *first* is most frequently of a relatively specific kind; as an example we may cite the particular method used by any one in dealing with historical data, or in solving problems in which number is the essential feature. The child has to form such concepts for every subject taught in the school, and for sections of subjects, as, for example, in problems of interest, square root, the memorizing of dates, the observation of flowers. Here, then, we have generalizations in which the element of emotion is practically absent. We may find pleasurable feelings arise, of course, in any of the studies mentioned, but these will be due to interest in the matter and not to interest in the concept of method, which is purely intellectual. The second, or quasi-ideal, seems often to be found in the form of a broader generalization, and may therefore be of a more abstract kind and of more general applicability. Moreover it is accompanied by some degree of emotional motivation, as when mathematical accuracy or bodily cleanliness becomes a conscious aim. The third, or *pure ideal*, seems to possess greater possibilities of extreme abstractness resulting from still wider generalizations, and in common speech is known as an ideal. It is characterized by a strong element of emotion

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which forms the motivation and without which no proper reaction would be likely to take place. The characterization of the three classes here described, so far as degree of generalization is concerned, is not intended to be taken too rigorously. We doubtless know of cases where the concept of patriotism is confined to some single and narrow field of action, and of others where the ideal of generosity is limited to gifts of money. None the less, it is generally true that where the emotional motivation is strong, there is a greater chance that the concept may extend its influence through wider circles of thought and action. We wish here, however, to lay stress upon the narrowness that usually characterizes nearly all of the child's general notions. Experience reveals that all such concepts and ideals in application frequently work within very narrow limits. The harsh judge may be a kind, indulgent, and even weak father; the great lawyer with a genius for sifting evidence may believe in spooks; the classical scholar may be baffled by a modern language. One of the chief objects of this book is to draw attention to the narrowly specific nature of the concepts held even by those who have undergone prolonged courses of training. Nevertheless, the possibility must not be excluded that a few brilliant minds may succeed in drawing from specific and narrow training concepts of the widest sort. We do not shut our eyes to facts of this kind; we desire here merely to remark that these exceptional cases serve to confirm the theory of concepts here put forward.

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Turning our attention to the purely intellectual concepts, we first of all note that the duty of the schools is to give or rather to aid the pupils in arriving at subject method concepts. Every branch of the curriculum, every phase of knowledge represented in the school, must be handled by the teacher in such a way as to bring out the principles of the method by which they are mastered. Each of these principles, since they apply to a very limited field of knowledge, may be regarded as relatively specific, applicable only in this limited field. If this be the case, it seems to follow that, according as the content of a subject is more or less valuable in life, so will the specific intellectual concept of its method be of greater or less value. *In considering from this point of view the constitution of any curriculum, we shall thus find it necessary to use the one criterion only, that of the intrinsic value of the material.* So far as these narrower concepts are concerned, there appears to be no necessity whatever to use *them* as our standard. They are tied to the particular material and it is this alone which we have to estimate according to its worth in life. In those cases where the purely intellectual concepts are of a wider kind, covering, for example, the methods common to the study of several languages, or of several sciences, or of the different branches of mathematics, the same argument holds good. Since the value of the concept of method depends upon the value of the particular group of subjects, and since the value of the group depends upon the value of its constituent parts, it follows that

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the relative intrinsic value of the material must alone be the standard by which we choose the various parts of our curricula.

Through failure to distinguish between the different kinds of concepts, Heck is unable to speak on this point with the precision it demands. He says: 'Out of the specific elements of method can be formed general concepts of method, but these concepts should be derived from methods of the most specific value in the environment. Thus can be realized two educational aims—training in the use of valuable specific methods, and the formation and application of valuable general concepts of method. To seek these aims separately, giving one study for its specific value and one for its general method value, is clearly a waste of the most precious asset of the school—the child's energy. It may be that in one study one value will be emphasized, but with few exceptions the studies of the most specific value will be those of the most general method value. Therefore it is certainly the wisest policy to base a criterion of studies upon the specific value of their elements of subject-matter *and of method*.'[1] We are in general agreement with the whole of this statement except the last three words. Although in other parts of his book, the author makes his meaning much clearer as to the standard of studies, we think that in the last few words of the extract quoted he may obscure rather than elucidate. At any rate, the quotation serves to bring out the antithesis between his view and that put

[1] Heck, *Mental Discipline and Educational Values*, p. 164.

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forward here. In choosing specific subjects of study, we shall have no need to consider specific *methods*, since these are bound to the subject-matter and only become important when we come to consider the *method* of teaching the given subject-matter. The one criterion we must keep before the mind is that of *the relative importance of the material in life*—in other words, its relative *intrinsic* value.

Let us now turn our attention to the second class of concepts, those we have named the 'quasi-ideals'. In giving a list of such general notions we run great danger of conveying a wrong impression. It has already been seen that accuracy, observation, neatness, &c., are not general powers possessed, or not possessed, by an individual. We have noticed that neatness of attire, for example, may co-exist with lack of neatness in many other directions. To call such a quality 'neatness' without further remark is therefore ambiguous. Observation, too, is not a general power which is applicable to flowers, faces, outlines or shadows. There is here again only one word for several distinct notions. A very general error exists in the use and meaning of such terms. 'Accuracy,' for instance, may be used in a specific sense, meaning mathematical accuracy, language accuracy, or bodily movement accuracy; but it is also constantly being used in a general sense, meaning the general concept in its more abstract form, where it only contains the features common to all the specific forms. In ninety-nine cases out of one hundred all terms of this kind are used with

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a general, when they should be used with a specific signification. It is necessary, therefore, to recognize that the specific sense alone of such terms is unambiguous, and that very rarely indeed have we real grounds for making use of the most general meaning, and under no circumstances can we imply a general application of such concepts. For it is clear that reflection upon the meaning of such a term might result in a fairly correct idea of its *general* nature; but this is a very different thing indeed from possessing the idea in a living form, in such a form as expresses itself in an attempt at application.

Thus in discussing the present question we shall have to distinguish between three meanings of such terms as judgement, observation, imagination, and others of the same kind. In one sense the words are used to refer to *acquired abilities*; and these are never general but always specific, and generally very narrow in range. One man may possess among others the special ability of cracking nuts, or of igniting a wax match by friction upon a part of his person; we do not, however, usually dignify such an ability with the word 'judgement', although in essence it may depend upon that quality. In another sense the terms are used with reference to the *concept* or general idea. But concepts of method vary so much in width and abstractness that it is absolutely necessary to distinguish between the narrow general meaning exemplified when we say that a man is a good judge of horses or cigars, and the much wider general meaning in mind when we express such con-

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fidence in a friend's judgement as to consult him on every problem of life which is beyond our own powers of solution. The same distinctions must be borne in mind when dealing with the quasi-ideals. We do not bestow the epithet of 'neat' or 'clean' upon an individual merely because he has acquired the special ability of keeping his moustache free of the soup; and we distinguish between the narrow 'accuracy' of a member of the Toxophilite Club and the wider 'accuracy' which is evidenced by one person in many and varied departments of life—financial, historical, linguistic, and others.

This last type of generalization, resulting in the formation of the wider kind of quasi-ideals, is possible, but only to minds of a rarer sort. School-children up to 14 years of age can hardly be supposed to possess the powers of reflection and conception necessary. Life's later experience may provide the material and training which will give definition to these glimpses of the world of concepts, but this again will only occur in exceptional cases. More may be done in the case of the secondary school child, and still more with the graduate. Experience, however, convinces us that under the most favourable conditions the results of education fall short of what we should have a right to expect if formal training were anything more than a tradition. How many men of our acquaintance are observant or accurate or neat or temperate in all or even in many things? We therefore have no reason to be unduly sanguine. It is clear that we shall have

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to use the most scientific procedure and endless pains if the child is to acquire the least general of these concepts—those which are specific to some method of dealing with a single phase of life, with a single subject.

If we assume, therefore, that the concept will be generally of a specific nature, and will have very little chance of application beyond the particular subject to which it belongs; and if we further assume that the difficulty of widening such a concept to cover fields of thought and experience not yet within the child's range is very great; then we shall be able to use here exactly the same argument as was found applicable in the case of the intellectual concepts of method, an argument which led us to see that the concept depends upon the matter from which it is drawn, and finds its easiest and most frequent applications in similar matter. Only when the school curriculum mirrors life will it be possible to implant the special ideals which can function in that life. If the school-child's conception of accuracy is acquired merely by the study of Latin grammar, it will have very small chance of functioning in the practical pursuits of life.

The view here taken of the school's educative influence is admittedly a low one. We have in the preceding remarks assumed that the wider quasi-ideals are impossible in school life. But such an assumption would not be entirely correct, and we wish now to work upon another and wider, although more

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precarious, assumption. While it is true that the wider concepts are, generally speaking, possible only after the age of 14, yet something can be done even before that age. Even before adolescence, the normal child can obtain workable ideas of a general nature. He can form a rough working notion of accuracy, observation, neatness, cleanliness, temperance, courtesy. This must, of course, be admitted; but with a caution not to imagine that these notions are other than of a very concrete kind, such that a small difference in the external situation or problem may hinder the attempt to classify it, and prevent the rise of the proper concept of method and its necessary application. With this caution we may now take into account the assumption that the pupil can attain to a wider type of the quasi-ideal—such a one as may cover several or many phases of experience.

It is evident, first of all, that these wider concepts will generally develop from the narrower ones. Suppose, for example, that from the concepts a, d, g, representing quasi-ideals involved and made explicit in dealing with three distinct subjects of the curriculum, say A, D, G, a wider concept x is formed, which may not only be of great use in studying new branches of each of the three subjects, but will probably be additionally useful for certain other subjects, say, B, F, K, &c. So far as A, D, and G are concerned, specific study and practice in each are by our hypothesis assumed. There is no question of formal discipline with regard to these three subjects. We have also

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in other parts of this book tried to show how each of the concepts thus formed may be made to apply to other subjects containing identical elements. But here we are concerned with a different question. Can the more exhaustive treatment of *one* special subject produce x, this wider notion ? At first sight it would appear impossible to arrive at x by any other means than in the way suggested, since the concept always differs, however slightly, according as the concrete facts differ from which it has been drawn. Actually, two persons may, starting from two different bases of fact, arrive at concepts which, if not identical, at least belong to one type. The certainty with which the application to other situations follows will vary, however, according to the closeness of relation between those concrete problems from which the concept was derived and the new problems to be solved. Everything must be done, therefore, to secure this close relationship between school work and life. If this be wanting, the labour on the part of both teacher and child becomes enormously increased, and the result bears no proportion to the expenditure of time and energy. If further, in place of the vital variety of matter, we seek to do this work by means of *one* particular subject, we court disaster. Monotony would probably kill the interest, and even assuming the best, we should still have not the certainty but only the possibility of such wide concepts. All things are possible ; but class teachers are not conjurers, and they have, although they often assert the con-

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trary, to deal with normal average children. There is no need, and indeed it would be wrong to create difficulties in this way.

We may, however, ask another question, the answer to which will carry the same argument further, as to whether there are some subjects which from their nature exhibit *more clearly* than others certain fundamental concepts. For example, does nature-study develop better than other subjects the powers of observation, mathematics those of sequence and accuracy? If we omit for the time any consideration of the commonly narrow and specific character of such concepts when derived from single subjects, I think that it cannot be denied that this is occasionally the case. Experience would further seem to suggest that if a characteristic is clearly and unmistakably exhibited in one set of phenomena, it should be more easily perceived when presented in another and new set of phenomena. It is, then, probable that a concept clearly grasped in one subject may sometimes lead to a concept of the same type being more easily abstracted from another; that, for example, the concept of accuracy developed through the teaching of arithmetic may more easily lead to the concept of accuracy in the study of physical science. The question we have to ask ourselves is whether there is sufficient certitude in this matter, or whether it is of even sufficient importance, to warrant the nclusion of certain subjects in the curriculum purely in the grounds of the ease with which a valuable

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type of concept of method is derived from them. In other words, shall the relative value of this *concept*, together with the relative ease with which it is derived from the material, and apart from consideration of the intrinsic value of the material itself, be used as a standard in selecting the elements of a curriculum? Are we forced to use such a criterion, or can we still maintain the one standard of the intrinsic value of the material to the exclusion of all others? If it can be shown that we *always* have to choose the *most* intrinsically valuable matter from among a number of competing and at the same time useful subjects, if it can be shown that this ought to be done without any reference to the comparative values or ease of derivability of the concepts belonging to these branches, then the same argument can be used *a fortiori* when we come to choose between the living and the formal subjects.

From the purely pedagogic side we have as yet very few data for deciding this point. For centuries nothing but classics was taught. We are still assured by some classical scholars and teachers that the value of the training lies in its use as a mental gymnastic; by others more modern in their views, that the value lies in the concepts to which it introduces the pupils. The same advocacy has more recently been made on behalf of science and mathematics. We have had, and still have, one section of a school studying the humanities and another the sciences. Never have we yet had a curriculum based simply upon the

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guiding principle of intrinsic values. We have no pedagogic data, therefore, upon the basis of which we can dogmatize one way or the other, and indeed there is little likelihood of ever obtaining them through comparison of the merely objective results of teaching different types of curricula. The general tendency has, we believe, been decided in the sense that place for subject-matter of value to a full life *must* be found in the curriculum. But as to whether certain branches of instruction and certain formal subjects should be included because the concepts of method and ideals derivable from them are essential and easily reached, the pedagogic mind appears to be still undecided. We believe that the modern tendency to ignore this standard in selecting school material is correct, and for the following reasons :

1. There is no one subject which affords the possibility of developing one of these quasi-ideals which shall be universally applicable. Almost invariably the wider concepts are developed from a number of narrower ones. The *number* of specific habits of the same type acquired at school and the *number* of narrow concepts corresponding to those habits are considerations of vastly greater importance than the degree of ease with which one such concept can be drawn from one particular material. It is much more important, for example, to insist upon observation in every branch of instruction than to include nature-study merely for the purpose of training what after all is usually only one special form of observation.

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2. If any matter, useful or formal, is to be included on account of the alleged value and derivability of its concepts, it still cannot be allowed to take the place of other useful material which may furnish concepts of a type similar in important respects to the former, and, what is more to the point here, which furnishes the child with acquired abilities essential to typical life. The days are past when any subject demonstrably useful to common life can be actually omitted. It is therefore clear that the facility with which certain concepts can be formed through the study of a particular subject cannot be urged as an excuse for placing that subject in the curriculum at the cost of omitting another and more intrinsically valuable subject.

3. It might be necessary to risk the danger referred to, if we had to decide between the alternative of teaching a certain subject and that of doing without such ideals as observation, accuracy, rigid proof. But happily the case is otherwise. We have only to choose whether we shall make use of some comparatively less useful material for evolving such ideals, because the evolution of the concept from that material appears fraught with fewer difficulties, or whether we shall make use of several more intrinsically valuable subjects for the same purpose. In neither case do we conceive of the schoolboy leaving school without the attempt being made to help him in providing himself with these working ideals. From this view of the question, there seems little room for doubt that the concept as the criterion must be rejected. The teacher

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who draws attention to and insists upon obedience, regularity, accuracy, strict proof in all subjects and on all occasions, will have little need of any special material to help him, and still less for any formal subject-matter.

4. It has already been shown that, if we put aside consideration of the relative value of the concepts, we are logically forced to select the subjects most truly representative of life's situations. But on the other hand, if we use as our standard the relative values of the concepts; that is, if in planning curricula we select those subjects which appear most likely to lead our pupils to form clear notions of accuracy, of logical sequence, of observation, and of other general qualities, we shall still be compelled to include other subjects of a more practical kind. We shall still find it necessary to use in addition the other standard, that of the intrinsic value of the material. No exhaustive methodical treatment of one or two subjects can be substituted for some treatment of all the typical and intrinsically valuable branches of knowledge. For no general notions such as those of mathematical proof and historical proof are so similar that one can take the place of the other. The accuracy demanded by physical science is not identical with that which is necessary in the English subjects, and the latter will therefore require the same methodical conceptual treatment as the former. Where the concepts are drawn from material divorced from real life, this further labour will be so much the more necessary.

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5. The reason for the clearness with which a quasi-ideal stands out in some material is probably to be found partly in the fact that the same method is endlessly repeated. A particular kind of sequence or necessity for accuracy is inseparable from every form of mathematical calculation; a particular attitude of body and a special form of attention are at every moment characteristic of botanical observation. The conditions here are simple and few, but rigid. Now if we take literature or history, we find that the concepts of method are less clear, because they are from the nature of the subjects less often exposed. Literature, for example, may be studied in a hundred ways; it would not be a study of literature if we adopted the same constant attitude of mind. The conditions here are multiple and complicated, and therefore less rigid. It would therefore seem that the inference from such facts should not be to lay unique or even special stress upon the former type of subject, but rather to place reasonable stress upon and give more attention to the more important methods of the latter type. We would prefer to see in this difference in the nature of subjects a counsel as to *methods* of teaching rather than a criterion of the relative values of branches of the curriculum. Moreover, the endless repetition of which we have just spoken can be obtained by using *all* sides of school life for the work of concept building. And if this be a correct inference so far as concerns the competition between intrinsically valuable material, still less shall we be willing to

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allow the concepts of formal material to influence our selection.

6. It is extremely difficult to bring the formalists to book. We find them using quite contradictory and mutually exclusive arguments. Sometimes they assert that in certain formal material the concept stands out more distinctly because the matter *is* formal, and the mind is not distracted by the vital nature of the material. At other times they urge that the very difficulties of the material form a splendid gymnastic for the mind. We shall deal with the latter argument in another part of this book. If we grant that certain formal material contains the concept in a more legible form than many more useful subjects do, then the experience of teachers will generally agree that the advantage of legibility is more than counterbalanced by the loss of interest. Children are quick to perceive the necessity or usefulness of certain kinds of facts, and to measure their interest in them according to that standard. Only the mature and well-balanced mind can perceive and make use of the applicability of the concepts drawn from formal matter. Most minds would be better employed in thoroughly grasping the concepts connected with several concrete sciences.

7. We do not, however, attach much importance to this line of argument, and are forced to confess that the alleged ease with which certain quasi-ideals may be drawn from *formal* material appears mythical. The concepts of formal grammar, for instance, are, in

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the opinion of most teachers, not evolved without the greatest difficulty and pain; and it is safe to assert that the more formal arithmetic becomes, the less easy it is for the ordinary schoolboy to comprehend.

There seems, therefore, to be no ground for holding that the relative value of the concepts should guide us in selecting curricula, and so far as these quasi-ideals are concerned, there is *a fortiori* no ground for including any formal subject-matter purely for its training or disciplinary value.

Before leaving this part of the subject, a few words must be said with direct reference to the teaching of the classics, by means of which, it is said, these intellectual concepts of method and quasi-ideals are best inculcated. So far as the pure concepts of method are concerned, enough has been said upon the reasons which lead us to believe that they are transferable only with the greatest difficulty. Many writers believe, however, that the study of the classics has a very considerable influence in the formation of the quasi-ideal. It is supposed to possess 'admirable tonic virtues', 'some peculiar quality which braces the faculties of the learners'; 'it is', we are told, 'an unrivalled instrument for stimulating the reasoning faculties at an age in which their very existence might seem almost open to doubt'.[1] It is also said to be 'an excellent drill for scatter-brains'.[2] James Angell has stated the same

[1] P. A. Barnett, *Teaching and Organization*, pp. 214–15.

[2] Quoted by Mr. Sadler in *Unrest in Secondary Education in Germany and Elsewhere*, Special Reports, vol. ix, pp. 91–2.

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view in a more scientific manner. 'From this point of view', he says, 'it may well be that such studies as the classics and certain forms of mathematics have a peculiar value in affording the maximum of unpleasantness diluted with a minimum of native interest, so that a student who learns to tolerate prolonged attending to their intricacies may find almost any other undertaking by contrast easy and grateful.'[1] If the first part of this statement be true, it would seem very much like suggesting that all children soon after birth should be exposed to the winter's cold, on the ground that if they survive such a test they will find all other climatic conditions 'easy and grateful'. We should be doing here on the corporeal side what no doubt the classics have done in countless cases on the mental side, namely, slaying millions in order that a favoured few should develop rather more rapidly than they otherwise would. If it is contended that Latin can be taught in such a way that it is not felt to be extremely difficult, the contention must be admitted. But Angell's case then falls to the ground, and Latin, so far as the argument of 'difficulty' is concerned, has no priority over other subjects which are neither more nor less difficult.

Bismarck indeed threw great doubt upon the reliability of such an argument when he put forward Russian in competition with Latin, because its declensions and conjugations are much more numerous and *all* the verbs are irregular.

If, however, Latin is inherently more difficult, is it

[1] *Educational Review*, June 1908, pp. 9–10.

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not pedagogically more consistent to 'temper the wind to the shorn lamb' and seek subjects which, not so replete with difficulties, will lead the average child gradually to self-conquest?

It is interesting to observe in the present writer's experimental results some facts which seem to have some bearing on this point. The experiments were not framed in such a way as to throw light upon the hypothesis that unpleasant training makes other performances easy by contrast. For all the practices, though long and entailing considerable effort, failed to produce any distaste; but, on the contrary, so far as the children's demeanour and the students' introspections correctly indicate their mental attitude, proved distinctly interesting. The experiments do, however, throw some light upon the reverse phenomenon, in which exceptionally pleasant training makes other performances hard by 'contrast'. For where the training was of a very pleasant kind (exemplified in the practice of giving the gist of prose passages) we found a temporary decrease in the power of memorizing other and very dissimilar material. According to the introspections, pleasant feelings, aroused by intelligent organizing operations, seem to have given rise to feelings of repugnance to work of a mechanical nature. The unpleasantness of the mechanical work, strengthened by contrast, hindered the performance of the task. The 'laws of contrast' are well known and include many important limitations, such as propinquity, resemblance in all non-contrasted elements, &c. The

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results of our own experiments, for which we attempt to account by the alternation of emotional processes, harmonize quite well with these laws, but not at all with the formation of *stable habits*, as contemplated by Angell.

Perhaps the writer mentioned would prefer to have his argument stated in another way. He would possibly urge that the conquest of Latin through voluntary attention leads to feelings of self-reliance and courage in attacking other subjects. In this case we must insist once more upon the facts which observation and experiment both demonstrate, namely, that very few pupils *do* attain anything like a 'conquest' of the subject; that even when conquest has been achieved, it is by no means certain that the power is usable in other directions, and that even when we assume that it is usable, we in no way obviate the necessity of prolonged labour in these other subjects. Moreover, the conquest of *any* subject may give rise to such feelings of self-reliance and courage. There seems to be no need to manufacture difficulties; every subject has enough of them and to spare.

In this connexion, too, it is very necessary to avoid basing procedure upon psychological theories which are not only as yet unproved, but against which there seems to be a weight of evidence. The author of this view says 'that it is held by certain psychologists that although each form of sensory and ideational attention involves a special and peculiar motor attitude not found in any other form in which attention may be

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exercised, it is nevertheless true that there is a general attitude on which each of these special forms is grafted which remains as a constant background for all. Of course, if this contention be true, and I am disposed both on theoretical and experimental grounds to think that it is, there would be some matrix common to all acts of attention, and any development whatever would affect this central core in some degree '.[1]

Now it is not by any means proved that there is any such matrix common to all acts of attention, or in other words that attention is a general power ; it may be wholly specific to every task and therefore quite incapable of use in this ' faculty ' fashion. It is much more likely that processes of attention are entirely specific, each kind developing as the person deals with specific departments of life. When we are faced by a new type of facts, the specific attention given to them corresponds to that which has been given to another subject only in so far as the two have common usable elements. In this case nothing of the kind suggested could occur.

It may be asked how it is, then, that we find the power of voluntary attention appearing to grow *generally* as the child develops. Is this apparently general growth due to the training given by a few specific activities ? We must first of all question the fact of generality altogether. Every one's personal experience will provide many examples of instances in which he finds the utmost difficulty in giving attention to some matters

[1] *Educational Review*, June 1908, p. 10.

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with which he is unfamiliar, even when he may pride himself on possessing what he is pleased to call a 'strong will'. Such failures should cause hesitation in advancing the theory of a general growth.

But we can at once admit that such growth, if not general, is at least very wide spread. How do we account for this? It seems clear that in the case of attention we have processes which are in use in every phase of life's activities. The training is not derived from a few specific subjects, but from practically every type of mental activity. From sunrise to sunset multitudinous activities are at work which provide training. It is easy to see, therefore, why the very widespread growth of these powers of attention should appear to us to be the unitary growth of a 'faculty'.

So far as the practical application of the theory criticized is concerned, the teacher may very well be content to accept the inferences of its defender. He says: 'A boy taught to remark carefully what he sees, whether in the open field or under the microscope, may or may not learn to distinguish the relations of musical tones more readily than if he had not had the training for his optical attention. On the basis of the consideration just canvassed, we should look even in this case for some gain, however slight, and there is some experimental evidence to justify this expectation, as has already been mentioned. Moreover, we have to remember that the gain on the score of discipline to attention may be more than offset by the mutually inhibitory character of the habits involved in the two

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activities, so that loss and not gain would appear as the net result of certain combinations of this kind. But, in any event, nothing is more certain than that the boy's auditory attention must itself receive separate training if it is ever to be of much value. Training in observation, then, can never become widely effective unless it embrace all the important forms of sense activity.'[1] Apart, therefore, from the uncertainty of the theory, there is nothing on the practical side which could give the slightest warrant for the inclusion of Latin or any formal matter for the reason adduced by Angell.

In the light of these decisions we shall be able to go much further than Mr. Sadler when he says: 'It is generally agreed that many old-fashioned schoolmasters were apt to overstate the argument in favour of formal discipline for the mind.'[2] And this understatement of the case prepares us to hear that 'teachers began to throw stress on the need of awakening intellectual interests rather than on the benefit of stern mental discipline. But danger lay in this extreme no less than in the other. Excitement and excessive variety in education may do as much to impair the value of training in one direction as pedantic formalism may do in the other'.[3] We wonder why these two are offered as alternatives. The first theory is founded upon a piece of false psychology. There is no truth in it, and it is therefore extremely misleading to speak as if it were merely an extravagance or a flavour of which

[1] *Educational Review*, June 1908, p. 11.
[2] Sadler, *Unrest in Secondary Education*, p. 93. [3] Ibid.

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we must be careful not to use too much. We must get rid of the false theory and its applications; we must seek a new principle, verify and apply it, taking precautions not to fall into the error indicated. Teachers should realize by this time that there is no antithesis between mental discipline and interest. We cannot therefore agree with Mr. Sadler when he asserts that the study of the Classics will live long because, among other reasons, 'in an age of intellectual distractions it is not amiss to have at least one tough and solid subject in every curriculum.' [1]

Coming now to our third division of concepts, those, namely, which we call 'ideals' in the true sense of the word, it remains to be seen whether there is any reason why, in selecting subjects for the school curriculum, we should use the *ideal* as a criterion of the value or right of entry of subjects or sections of subjects into this curriculum.

Ideals in school and in life are invaluable. They are vital; and life, however successful, is of little worth without them. So important are these ideals for the child and the nation that if the alternative lay between the possession of these and knowledge, we should unquestionably choose the former. It may be admitted, too, that the chief function of the schools is to prepare the children to form ideals; to lead them to such emotional conceptions as in their application will justify education and civilization. What we wish,

[1] Ibid., p. 93.

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however, to prove here is that in selecting the material of school studies we can and must use a less distant, a more immediate and practical standard than that of the nature and loftiness of the ideals. We wish to demonstrate that the attention of the framer of any general curriculum must be concentrated upon the *intrinsic* 'knowledge' value, and that when we come to teach the matter thus selected, we shall then seek the most adequate methods of inculcating the ideals which it is possible to reach through such subject-matter.

Before developing the discussion on this point, it is perhaps well to remind the reader of certain less vital but none the less important considerations. Let it not be imagined that the schoolboy's ideal is really general, really abstract. On the contrary, it tends to be more and more concrete, according as the mind constructing it is immature or poor in quality; in very many cases it covers no more than one or two narrow phases of life. We are always warring against this narrowness. We are always planning and contriving to enlarge the concept, making it more general and therefore more widely applicable. To do this, the ideal must be made to appear in every branch of school work. Without such many-sided work there can be no certainty of its generality. Ideals *may* be abstracted from any subject, if well taught; they arise most easily when all are used for the purpose. It follows from this that, assuming good teaching, there is little danger that any given ideal will be neglected because a certain subject is not included in the curriculum.

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Moreover, it will be generally admitted that a pupil's ideals are more easily and spontaneously obtained from a subject which interests him. Children's interests vary; they find an absorbing interest in one subject and remain indifferent to others. It is therefore risky to depend over-much upon one particular material.

And now to get to hand grips with the main difficulty of the problem. It is said that the study of the humanities is the best means of bringing out certain ideals of great emotional motivation. This appears to me to be true. The author of *The Educative Process* states a fact which seems incontrovertible when he says: 'The classical education of the past undoubtedly had little worth in so far as the intrinsic value of its subject-matter was concerned; but it had immeasurable worth in so far as the ideals that it instilled were concerned.' [1] There is little doubt that the study of the classics is of practically negligible use for furnishing intellectual concepts as this term has been defined previously, since the specific concepts of method here made use of have very insignificant connexion with real life. Further, reasons have been adduced to show that it has no marked superiority over other subjects in its power to awaken concepts of the quasi-ideal kind, such as neatness in general, accuracy in general, and others. There is no doubt that its greatest value consists in motivating the pure ideals, such as generosity, patriotism, courage, firmness, &c., and it does this more easily, I think, than most other subjects. This is the real citadel to which

[1] Bagley, *The Educative Process*, p. 220.

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the defenders of 'Classics for all' must eventually retire, and where perhaps they may resist all attacks. All other arguments are mere outworks, with the tradition of a strong and stubborn defence. Let us examine for a moment the main fortifications. When the supporters of the general teaching of Latin urge the ideals which such a study gives rise to, we cannot satisfy either them or ourselves by the assurance that other studies do this equally well. The writer just quoted seems to think otherwise when he says: 'Intrinsically useful materials may just as successfully form the basis for the development of ideals as intrinsically useless material. That the student of engineering or agriculture or commerce does not always acquire the ideals that mark the cultured and "refined gentleman" is not the fault of the subject-matter, but rather of the method. The old classical curriculum did not always produce the desired result; in both cases the subject-matter is always subservient to the spirit in which it is imparted.'[1] Professor Bagley *may* here be in part right, for classics have had centuries in which to develop method, the sciences only as many decades. Further on he says: 'It may be that the tendency toward mechanical method is stronger in the former case. Everything that is in the line of progress carries with it some new and often unforeseen danger; and just because scientific and technical instruction is intrinsically useful, the instructor is probably more likely to miss the broader outlook, which in turn is more easily

[1] Bagley, *The Educative Process*, p. 221.

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retained when the value of the subject-matter is purely ideal.' [1]

The last quotation strikes one as true and peculiarly valuable, and yet it leaves the mind unsatisfied. Most persons would feel that even if the science had been learned at the feet of Huxley or Darwin, it would not have been so formative of ideals as the study of the classics. Neither teachers nor children are, however, in the main geniuses. Our argument should therefore receive all the more weight when we admit that the classics are more suited than arithmetic or geometry or science to the inculcation of the highest ideals.

Now this superiority may arise either from the nature of the subject-matter or from the method of teaching the subject. There can be little doubt that it is to the former of these that it must be attributed. As the greatest of living Greek scholars says: 'We learn Greek in order to read Greek books.' It is by the *content* that the characters of the pupils have been influenced, and noble ideals formed. The books translated by the intelligent and the keys mastered by the incapable, the indifferent, and the inimical, have here played a great rôle. Many things have, however, tended to reduce the value of this classical study. The fewness of the books read, the bad translations, the difficulties connected with obscure meaning, and the unpleasant feelings associated with the classical writers on account of their too close association with an unfamiliar accidence and syntax, have all helped to lower

[1] Ibid., pp. 221–2.

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the ideal-forming power of such a study. It is the belief of the writer that the sterling and frequently noble qualities of the public school boy are largely due to supplementary causes. Men who *could* read the great writers of antiquity and who were therefore able to absorb their ideals have given the tone to the public schools. Culture consists in applying the ideals inherited or derived from study to the daily life, and that is what these teachers did. Their influence was felt in the form of school government, in the conduct of sports, in their life with their pupils. The intimate and constant association of the English teacher with his scholars outside of school work has impressed foreigners much more than his knowledge and capacity as a teacher.

Now where does this line of thought lead us? Inevitably to the conclusion that the ideals, so far as they depended upon an understanding of the subject-matter, might have been much more widely disseminated and put within the reach of even those who found the classical languages distasteful or too difficult, if the ancient literature had been made attainable by means of literary translations and supplemented by a study of our own not unworthy literature.

In so far as the subject-matter of the humanities is concerned, there is little doubt that they lend themselves much more readily to the development of ideals than science or mathematics. They contain the quintessence and pith of human experiences and indeed *typical* human experiences, the value of which time cannot diminish. They provoke, therefore, interest of a kind

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that no physical science can hope to induce; and when stripped of the impediments inherent to the indirect method of approaching them, when presented in the mother tongue in a form consonant with the highest literary ideals and unaccompanied by the extraneous difficulties of a foreign tongue, they may reasonably be expected to achieve more for the development of the 'pure ideals' than any other branch of instruction.

This much-to-be-desired result can, however, only be reached if, in selecting the material, we deliberately choose those parts which present the *typical* experiences of mankind. A selection based upon the diversity and greatness of the ideals presented will not succeed in making the appeal we wish to make. The loftiest conceptions may atrophy unless they arise out of, and constantly receive renewal from the real and typical experiences of men. No selection of 'goody-goody' stories—a selection made according to the kind of ideal required—can serve our purpose. Neither history nor literature is first of all a list of moral precepts. They are both, so far as the school can make use of them, records of facts, and from them we must choose those which are the most important in leading the children to a *comprehension* of human endeavour and attainment.[1] It may be that the child will look for

[1] In the curricula of schools giving higher education, among such intrinsically valuable matter will of course be found the best classical prose and poetry (for a few favoured ones, in the original; for others, in translations), containing the essence of human experience in perfect forms of expression; and the central facts of Roman

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himself beyond the comprehended facts to the ideal of which the concrete facts are often the embodiment; it may be that the teacher by his inspiring method will be able to make the vision clearer and idealize it. In any case it will be the duty of the educator to present facts of genuine 'knowledge value', and leave to the child and the teacher the duty of extracting from them the greatest degree of training possible.

It has been difficult to avoid using as example, the best known and best defended instance of formal material, namely, the classics. There has been, however, no intention to discuss exhaustively the claims of Latin and Greek to a predominant place in the school curriculum, but simply to examine the relation between recent psychological research and thought and the problems of the school curriculum, of which the above is typical but by no means unique. As a result of our discussion, we seem to be compelled to adopt the view that under no circumstances whatever is it necessary to inquire whether a subject proposed for admission to the curriculum has mental gymnastic or formal training qualities; we shall satisfy all psychological, pedagogical and social demands if we apply the one standard of worth, namely, the *intrinsic value of the material.*

History and Law, without a knowledge of which our own civilization is incomprehensible.

For further exposition of this aspect (intrinsic values) the reader is asked to refer to that part of Chapter VIII which deals with the teaching of history and literature.

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CHAPTER VII

PRINCIPLES GOVERNING THE SELECTION OF MATERIAL—CRITICAL

BEFORE passing on to consider what concrete elements of the different branches of experience we should present for the pupil's assimilation, it would be well to clear up our general principles by a brief examination of the views of the best-known modern authorities.

First of all, it is as well to reassert the result of our previous investigations. For the various reasons we have urged with reference to so-called formal discipline, we shall break away entirely from that unfortunate view of the curriculum which sees in various *facts* more or less disciplinary value, and for this reason accepts or rejects them. No subject is to be chosen on such a ground. The intrinsic value of the matter is to be the only criterion.

The lofty aims which the school sets before itself in inspiration and in character-building are of the utmost importance; but if they are to be attained, it must be through the inspiring influence and scientific *method* of the teacher. Sometimes the valuable facts themselves may without the assistance of the teacher work in the hearts of children and become to them the 'splendid spur'. But we need never select material simply because it has a disciplinary value.

Let us clearly distinguish, therefore, the content, the

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matter which children should be taught, that is, the curriculum, from the concepts of method and of conduct; the ideals, quasi or pure, the attitudes of mind and the outlook which we should help children to form, from this content. Unless we do this, there is no certainty of any result but utter confusion.

Herbert Spencer's views are well known. 'How to live; that', says he, 'is the essential question for us. Not how to live in the mere material sense only, but in the widest sense. . . . To prepare us for complete living is the function which education has to discharge.'[1] Life, according to Spencer, consists of five leading activities, and arranging them in their order of relative value he gives them as follows:—(1) Activities directly ministering to self-preservation; (2) Activities which secure the necessaries of life; (3) Activities of rearing and disciplining offspring; (4) Social and political activities; and (5) Miscellaneous activities of leisure life. His argument consists in showing that the school curriculum must be constructed on lines parallel to these activities; that the relative values of subjects must be determined by the position they take among them.

Spencer's approach to the problem of educational values seems to me of immensely suggestive worth; it was the outcome of a principle which can no longer be contested. If Spencer had adhered to his own standard of life 'in the widest sense' quoted above, he would have arrived at a closer approximation to the truth, and

[1] Spencer, *Education* (Williams and Norgate's Edition), p. 9.

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would incidentally have escaped much of the rough handling he received at the hands of those who think that ' man shall not live by bread alone '. He attached far too little importance to the leisure, the cultural side of life—to literature, music and the arts ; he appeared to imagine that the millennium waits only upon the general absorption of a number of scientific principles. He also expects too much from the primary school child in the matter of conceptual thought and too little in the matter of habit. He forgets, too, that the importance of an *adult* activity cannot decide the position it shall take in the school. Enough, however, has already been written by educationists in criticism of what is a wonderful contribution to education, more wonderful in that it was the work of an outsider It is sufficient to point out here that the vital difficulty consists in Spencer's view of what constitutes or should constitute for the ordinary person life and its experiences. One other interesting point arises in connexion with Spencer's theories. He has been convicted and stoned for a most distressing fallacy, in asserting that the disciplinary or formal value of the material of instruction increases or decreases according as its importance is great or small in the activities of life. It must be so, he said. ' It would be utterly contrary to the beautiful economy of Nature, if one kind of culture were needed for the gaining of information and another kind were needed as a mental gymnastic.' [1] Now as to the logic we say nothing ; but as to the conclusion, we may go so far

[1] Ibid., p. 41.

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as to express a belief which finds some psychological confirmation that the more the matter studied touches the vital, typical experiences of life, the more chance there is that one will get out of it its fuller training value.

We will next examine the outlines of Professor Welton's method of deciding upon the curriculum.

He holds that school education should form one of the media through which the child is led into 'good, true and effective relations with the world'.[1] These he analyses into preparation for (*a*) utilitarian ends, (*b*) social ends, and (*c*) the private life of cultured leisure. A classification of this kind he would probably recognize as being of a very rough kind, the first and second divisions frequently merging into one another, and the third reflecting itself constantly in the social relations. It is of course useful in marking out what are the predominant characteristics. So long as we keep before the mind the fact that the typical experiences of life are aspects rather than divisions of it, it can do no harm. The emphasis upon these different aspects will vary, we are told, according to the present and future life of the child.

We are then taken a step further and are told that on the subjective side this means a development of the inner capacities with reference to these ends.

Here we begin the approach to the real problem. There is evidently in the objective and subjective treatment he speaks of a reference to 'value as knowledge'

[1] Welton, *Principles of Teaching*, p. 25.

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and ' value as discipline '. Both of these are said to be abstractions and *if taken separately* lead to error. The abstraction of ' value as discipline ' is considered by the author at some length, and is shown to be based on false psychology. The abstraction of ' value as knowledge ' leads, we are told, to a number of evil tendencies, especially reflected in the utilitarian demands of the parents. This is possibly true, but it is beside the point. We are not seeking to find ways and means to convert parents to a saner view of education; we are engaged in seeking the best scientific criterion for a curriculum; in discovering what are the best and most typical experiences of life for which to prepare our scholars. So far as primary education is concerned, the parents have very little influence in determining courses of study.

We are next told that ' neither " value as discipline " nor " value as knowledge " is therefore a sufficient test of educational value ', and moreover we cannot, like Herbert Spencer, assume that they coincide. ' Each is a factor in the fuller test we have suggested.' Here there is some difficulty in following Professor Welton. The object of education he makes plain, namely, ' to bring the pupils as far as possible into good, true and effective relations with the world of which they are constituents.' [1] He also gives, as I understand him, a threefold division of the world of experience to which the child must be introduced—the utilitarian, social, and cultural. One might imagine that after further

[1] Ibid., pp. 25–9.

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demonstrating, as he does, the falseness of the notion of 'knowledge as discipline', he had achieved the one simple standard of intrinsic values. But this is not the case. We are told that 'Such a broad statement of the test of value covers and includes all that is true in the current tests of educational value, viz., as Spencer puts it, "value as knowledge and value as discipline." At the same time it prevents exaggeration on the one side or on the other if it is fully and consistently applied, for it should prevent us from considering any piece of teaching exclusively from either of these abstract points of view—abstract in that in all real learning, there is both content, or some knowledge acquired; and discipline, or mental exercise in the attainment of that knowledge'.[1]

From one point of view the above quotation seems to express a very true and valuable theory. The truth of it appears, however, only on one assumption, namely, that the notion underlying the terms 'discipline' or 'mental exercise' as used in the above extract, is an altogether different one from that which Professor Welton spends some time in combating. The latter notion is none other than that of 'formal training'; the former is that of training by means of reflection and judgement through what we have termed 'concepts of method' and 'ideals'. The author gives no indication whatever that the two sets of terms cover different meanings. In fact, he appears to admit their identity; and after exposing the fallacy of 'formal discipline',

[1] Welton, *Principles of Teaching*, p. 25.

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falls back upon a warning against an exaggerated conception of its value. The word 'exaggeration' is totally misapplied; the conception of formal discipline or mental gymnastic as defined here, is, as Professor Welton himself demonstrates, not exaggerated, but false.

If we insist on holding fast to the one meaning given by Professor Welton to the expression 'discipline', we shall have to look for our criterion of school studies in the fuller test which seeks to combine 'value as knowledge' with 'value as discipline'. We shall have, then, once more the old two-fold criterion, a double standard. He himself admits that they may oppose one another. We shall therefore find ourselves in the old position, admitting material which is of little value as knowledge, but of supposed high disciplinary value, or vice versa. It might possibly be that there is no way out of this dilemma, and that the utmost we could achieve would be a balancing of the two. But the present book is an attempt to show that such an uncertain method is not necessary.

In *constructing* the curriculum we can altogether dismiss from view any consideration of discipline. But in *teaching* the curriculum, it will occupy a very different place.

It is true that in any attempt to divide and subdivide the course of work into sections for the different classes, we shall have to take into account not only the experience which is already a possession of the child, but also the stage of development he has reached—that

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is to say, the child's capacity with reference to perception, imagination and conception, his outer and inner experience; but this has nothing whatever to do with the idea of selecting any material for the purposes of mental training. These stages merely indicate the moment when we may expect the children to assimilate, or the degree to which he may be expected to assimilate, intrinsically valuable knowledge. We are in complete agreement with this view, and indeed with the whole of Professor Welton's practical treatment of this problem. The criticism we have ventured to make has reference entirely to the theory by which he reaches his double standard in the selection of school material, a standard, moreover, of which we fortunately hear no more when he comes to the actual work of choosing the matter of instruction.

One other illustration of the way in which the author has failed to distinguish between the domain of curriculum and that of method of teaching the curriculum. He gives four principles upon which the curriculum is to be constructed. Upon these there is no criticism to make except to note that in the fourth the *matter* seems to be confused with the *method* when he says that 'such knowledge should illumine as wide tracts of experience as possible'.[1] If he means that such knowledge should be typical, he has already stated this in the first principle. If he means that such knowledge *should be made* to illumine as wide tracts of experience as possible, he is clearly referring to our *method* of

[1] Welton, *Principles of Teaching*, p. 31.

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getting the full disciplinary value out of the material by our method and spirit of teaching it. Indeed, on the same page, when speaking of the demands we may rightly ask the curriculum to fulfil, he seems to treat it as if it were a person, instead of a rather inert piece of matter, inert until a living teacher has breathed into it inspiration and richness of meaning. 'Does it instil . . . does it so relate and organize those ideas?' . . . 'Is it likely to do this in an inspiring way?' These seem to me to be demands which may quite properly be made of an ideal teacher, but not of a curriculum.

In Mr. Raymont's *Principles of Education* we get another able treatment of the same problem. With his general view of the demands of the curriculum we are in perfect agreement, and indeed, there is little divergence between our views except with regard to one point. Mr. Raymont goes so far as to make a somewhat detailed examination of the relative values of the school studies. He says: 'We have narrowed down the issue so far as to place certain groups of studies, for the purposes of school instruction, above all the others that engage the attention of adults, on the ground that they cover the largest area of life and conduct.'[1] Having reached this, as it appears to me, very valuable point, he ends by despairing of the possibility of any agreement as to relative values. Some contend, we are told, that the humane studies, others that the sciences, and still others that mathematics, are the most intrinsically valuable. Mr. Raymont believes

[1] Raymont, *The Principles of Education*, p. 108.

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that all discussions of curricula in general are bound to fail.

It is here that every optimist must part company with the writer quoted. The truth is, that the task of estimating relative values has never in this country been seriously attempted. If we deal with a fairly definite type of town primary school, there appears to be no *a priori* reason for hopelessness with regard to systematic discussion of intrinsic values. Hitherto this has been attempted only in an unsystematic way by scattered individuals. School curricula will differ in details, but the broad outlines, we believe, may be fixed. At any rate, in some process of this kind lies the best hope of the future.

We venture, therefore, to accept Mr. Raymont's standard of values and to go one step further—to *use* it. No recent English writer upon this subject has put the matter more plainly or (so it appears to me) more truthfully. Of the four principles enunciated by that writer, we lay stress first upon that one which declares that the greater interests of mankind must be represented in the curriculum; the other principles we shall have to examine later.

In the light of his principles Mr. Raymont discusses Spencer's and Herbart's views of the relative values of subjects, rejecting Spencer's for many and good reasons, and Herbart's as being an example of 'special pleading'. With reference to the latter view, he says: 'The practical educator, in framing curricula and apportioning time to the several studies, should steer clear of all

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this special pleading; when his boys grow to be men, some of them will have leanings in one direction and some in the other; and no one has a right to say that the man who spends his leisure in his workshop or garden or laboratory lives on a lower plane than the man who spends it among his books.'[1] This may be perfectly true, but it does not appear to me to suggest that all adult leisure occupations are of equal intrinsic value. We must refer again to the principle that those subjects which 'cover the largest area of life and conduct' must receive the greatest emphasis.

Let us see, however, the point to which we are finally led. In summing up the whole subject, Mr. Raymont tells us that 'the educator's business is to open up the various avenues impartially, until the time arrives when specialization becomes an imperative necessity'.[2] It may be that the word 'impartially' represents the only answer of which the problem admits. None the less, it is important to note that the word is quite ambiguous, and leaves the question of the constitution of the curriculum still merged in semi-obscurity.

After all, we are presented only with a negative view of the whole question couched in the following terms: 'Our chief contention is that where any subject is found to have won an uncontested place in school curricula, its position is in reality justified, not by its merits as a means of mental gymnastic, which may, however, be solid enough, but by its intrinsic value as a branch of human knowledge. No study can retain its position

[1] Raymont, *The Principles of Education*, p. 116. [2] Ibid.

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for long when its uselessness for life's purposes having been demonstrated, its advocates fall back upon the plea that at least it provides a training for the mind.' [1] The difficulty naturally lies in 'demonstrating' its uselessness. In this quotation we find the belief of the author expressed that 'intrinsic value' is the only criterion of the elements of the curriculum; but that there is no means of deciding between the relative values. On such terms we shall hardly be able to show adequate reason either for inclusion of new or exclusion of old material. Out of such a negative dictum I cannot see the possibility of any practical suggestions for reform of present curricula.

Let us next spend a few moments in examining the views put forward by Professor Findlay in his *Principles of Class Teaching*.[2] His method of approaching the familiar problem is as follows. He asks: 'What have been in the past the motives for selecting this or that school occupation?' He then enumerates some of them, and by analysis of these motives, by ascertaining wherein they require modification, he discovers principles or criteria, every one of which must be satisfied before any branch of study may be introduced into the school.

He finds that all motives are of two kinds—those arising from the adult's intense desire to create the child after his own image, and those arising from his desire to recognize the rights of the child. Between

[1] Raymont, *The Principles of Education*, p. 117.

[2] Findlay, *Principles of Class Teaching* (Macmillan & Co.).

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these two extremes he says 'we may place all the varying motives which have established the curricula of schools and which have guided the policy of teachers, from Solomon in Jerusalem down to Froebel in Blankenburg '.[1] In the first class he places the adult's motives of Equipment, Progress, and Conservatism. It is perhaps somewhat difficult to understand how he establishes any connexion between the adult's desire to create the child after his own image and the desires of Equipment or Progress. Probably the author never intended any strict classification of motives. He is more concerned in their analysis and in exhibiting their strong and weak sides. His position (I take it) is that these motives are in themselves good, but require to be considered in connexion with other principles arising out of the second class of motives.

We find ourselves in very strong sympathy with the author when he next examines the same problem 'with the eyes of the child '.[2] There is, however, a certain amount of ambiguity in this method of stating the point of view. Our examination of the problem 'with the eyes of the child' may mean that we attempt to look at the various school subjects just as a child would, having, one might suppose, preferences for these and dislikes for those, interests in one direction and none in another. This is certainly the most obvious meaning. Again, it may mean that in offering the different kinds of material for mental consumption, we take the child into consideration—his powers, his knowledge, and

[1] Ibid., p. 23. [2] Ibid., p. 27.

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his needs. This meaning falls more into line with an earlier expression of the writer in which he speaks of 'the rights of the child'.[1] We are, however, concerned to notice that he uses the expression to include both meanings, and the combination of these two meanings obscures the main principles which are offered for the elucidation of the problem.

There can, with Professor Findlay's clear literary style, be no doubt as to his general aim. He is here directly occupied in seeking a criterion for the *selection of the subjects of the school curriculum*. He says: 'Ever since the days of Ratke and Comenius, this plea, that is, the rights of the child, so far as *method* is concerned, has been allowed; for teachers admitted the need of preparing the school fare a little so as to suit the childish palate, but the selection of branches of teaching was another matter, and one in which the child could have no voice.'[2]

We will very briefly examine the five principles which, according to Professor Findlay, declare themselves when we study this problem 'with the eyes of the child', and which govern choice of studies. They are the principles (1) of growth, (2) of balance, (3) of interest, (4) of correlation, and (5) of concentration.

These form a somewhat heterogeneous collection. We will look at them seriatim. In the principle of 'growth', he designates an actual mental fact. A child's mind grows, and therefore requires different kinds of mental

[1] Findlay, *Principles of Class Teaching* (Macmillan & Co.), p. 22.
[2] Ibid., p. 27.

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food, furnished according to the stage of development. Grammar, for instance, cannot be presented until the pupil has reached the conceptual stage of thought.

The same idea of 'growth' may be extended to include the *content* of thought; the child's knowledge and expressional powers increase with age, and can only be built up upon a basis of previous knowledge and power. It is very clear, therefore, that the 'principle of growth' will have to be considered not only in selecting 'subjects' for study, but also in the more difficult decision as to what parts of the chosen subjects shall be taught.

The principle of 'balance' stands in quite another category. It is not a law of mental procedure. It is what ought to be insisted upon, rather than what is. Indeed, there is little tendency in the child towards what is here termed 'balance' or 'harmonious development'. On the contrary, the tendency is all towards lop-sidedness and specific habits of body and of mind. When, therefore, we make use of this principle, we actually oppose the stream of mental tendency. In the principle of 'growth' we follow the child's nature, in that of 'balance' we run counter to it. If we are to venture to do this, it is evident that we must look beyond the child for authority. If we view the matter 'with the eyes of the child', we shall not venture to interfere. It is quite true that in a sense the child does exhibit this principle, but in very imperfect operation. He exhibits not only desires to acquire all sorts of information, but also desires to do all

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sorts of things, to express himself in many forms of bodily movement. In so far, we see the tendency to preserve the balance; but when we come to examine more carefully the domain of the child's knowledge, all idea that there is a natural balance in mental development vanishes, and the educator, if he attempts to make use of the principle, cannot claim that he is following a law of the child's nature.

Now it is around this very question of balance that the battle over the curriculum is being waged. One educator clings to Latin as a 'balancing' subject; another recommends training in school of the so-called 'memory' by means of nonsense syllables. One writer tells us that to prevent lop-sidedness woodwork must be included; another that without the logical training given by grammar, the pupil's mind lacks balance. The reader will remember that we have previously attempted to demonstrate that the possibility of balance does not lie in any specific subject, but in the presentation of material covering the whole field of life. If, therefore, Professor Findlay uses the principle of balance with the meaning that the matter of the curriculum must be representative of all sides of life, then we are in entire sympathy with his views. But if, like so many other writers, he is thinking of method concepts and ideals representative of life, then we venture to assert that he will get very little help from it in shaping the curriculum.

Taking the phrase as referring to intrinsic and not disciplinary values, we further note that in the more

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superficial sense, this second principle is obtained from looking at the problem of curricula not 'with the eyes of the child' but with those of the adult. Just as the adult cáters for the needs of the child as regards 'equipment', so he does with reference to 'balance'. In another and deeper sense we *are* consulting the needs of the child, and are in so far examining the problem with *his* eyes. We are in harmony with the writer so far as to agree that we arrive at this principle as the result of a study of the child; but we also perceive the importance of distinguishing it from the previous principle, as being not a direct law of mind, but a counsel, as it were, of perfection, which requires all the bolstering it can get from non-psychological sources. In fact, we arrive at it through our social ideals. As with the principle of growth, however, the principle of balance must be accepted. The latter postulates a wide curriculum corresponding with the width of life; the former demands that the wind shall be tempered to the shorn lamb.

In the law of interest, we return to a category similar to that in which the principle of growth stands. It is a fact ascertainable from a study of the child, that he has 'fields of interest'. Because this is a mental law, it is of universal application, and can under no circumstances be suspended or limited. Herbart's 'interest' is a subjective phenomenon. He attempts to classify its various appearances according to their cognitive aspect. We need not delay here to notice the well-known six types of interest he finds,

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or to speak of the omissions. One thing it is important to observe; he did not attempt to analyse interest according to its concrete content, but from the point of view of the mental process involved, e.g. (1) interest in the empirical, (2) interest in origin, (3) interest in harmonious relations. This analysis would help us but little in attempting to build up a body of concrete knowledge suitable for school studies. It is rather an indication as to the stages to follow in deepening knowledge.

The word 'interests' is commonly used in a sense quite distinct from the Herbartian. We mean usually 'concrete interests'. In this way, interest in business, sports, geography, would be concrete interests in our usual meaning of the word. Interest 'in the strength, change, and novelty of the impressions', or interest aroused by any or every 'consciousness of the mysterious and the obscure'[1] would be interest in the Herbartian sense.

It is when the word is used in the former sense that we approach the question of the curriculum. Herbart, dealing with 'interests' under a different aspect, had no intention of arranging on that basis a scheme of school studies. He wished to elicit all six kinds of interest from every school subject. He was not the author of '*Concentration Centres*' and '*Culture Epochs*'.

Using now the more usual sense of the term 'interests', much in the way that the man in the street

[1] Felton, *Introduction to Herbart's Education*, p. 96.

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would use it, we must first note that although each child has his own individual interests, a study of child life reveals the fact that there are general fields of interest common to child nature. It is in part upon this fact that we base the possibility of a general curriculum, and it is in part this fact which must guide us in selecting material. Nevertheless, there seem to be certain necessary modifications of this point of view. The child, as Professor Findlay points out, has (*a*) native interests, and (*b*) acquired interests, the latter of which are acquired sometimes through a very painful process. If this is the case, and most teachers will agree that it is so, we at once see that the guidance which these interests give in selecting material is liable to serious errors. In selecting material we cannot by any means always follow the lead of the child's interests. As a guide these are infallible in one direction. They never err in directing *how* we are to proceed in presenting new knowledge. This can only be assimilated on condition that it is apperceived in the light of the child's past experience, and the more scientific our revival of the child's past experience and 'interests', the greater chance there will be that the assimilation will 'take place with the greatest possible mental culture, with certainty and without unnecessary expenditure of power'.[1]

If, however, we imagine that the child's concrete 'interests' can always guide us in the selection of material, we shall make grievous errors. We must,

[1] Lange, *Apperception*, p. 109.

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on the contrary, do what Professor James advises—make up our minds as to whether the matter is well within the child's powers, and then hold him to the task. In some cases we shall have to create a fresh interest by opening up a new field of knowledge, as when, for example, we begin the study of a foreign language. When we urge that the material of the foreign language should be such as lies *close to child experience in general*,[1] we are of course in a very real sense following the line of the child's interests. At the same time, we are choosing material of the highest intrinsic value; in this instance, the laws of assimilation and the principle of intrinsic values are seen to harmonize. In the case mentioned, it would do no great harm to regard the choice of material as the *method* of teaching the language. What, however, we chiefly have to note here is that the concrete interests of the child afford no clue in *selecting* the subject of instruction, but a great deal of guidance in *teaching* it.

The fourth principle enunciated by Professor Findlay, the principle of correlation—could be deduced from our experimental results. It is a direct corollary. If it be demonstrated that the process of training is much more difficult than hitherto supposed; if it be granted that the pupil tends to confine his concepts of method and even his ideals to the domains from which they were abstracted, the educator must do his best to counteract the tendency by exposing and emphasizing the relations existing between sub-

[1] Lange, *Apperception*, p. 132.

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jects, thus affording the child the utmost opportunity of consciously applying his concepts to other and associated domains.

On the subject of 'Concentration', our principle leads us to take an intermediate point of view between those expounded by Professor Welton and Professor Findlay. Briefly, the former has no belief in a 'core' subject, the latter has. If we may change the idea of a *core* into that of a *predominant* subject or group of subjects, then we are driven by the logic of our principle to advocate it. Certain types of experience occur much more frequently than others. There can be little doubt that in childhood, and in adult life still more so, the *human* relations are predominant. As we develop, they tend to occupy the foreground of our lives, and increase in number, complexity, and interest. According to our first inference, then, they will have to be correspondingly represented in the curriculum. Doubtless much could be said concerning their value as the germinating ground for the loftiest ideals, but we are at the present moment dealing with the selection of material and not of method, and shall content ourselves with merely observing that the 'humanities' touch life at a preponderatingly large number of points. They therefore must occupy the place of honour in the curriculum, and other subjects, as we have seen, will have to be correlated with one another and with them. But there seems sufficient reason why other subjects should be allowed to develop their own sequences, and not merely appear as the

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handmaidens of the central subject. The reader is referred to the very interesting discussion of the subject by Professor Welton.[1] Lange himself suggests reasons why this principle should not be unduly taxed. He says: 'The unequal rate of historical progress in the different branches may not admit of a useful concentration in the instruction.'[2] And again: 'The case is also conceivable that in the realization of the third and fourth requirements, the intrinsic value of the subject-matter for instruction might not receive its full due.'[3] We would go further than these modifications and urge that the subtlest and most unobtrusive 'concentration process' conceivable could hardly avoid the wholesale production of one-sidedness, the very evil that the theory of specific disciplines and of method concepts seeks to destroy. In combating the diffusive effects of a large number of subjects, the theory of 'concentration' carries us to the opposite extreme, and produces the man of one idea.

In making some general comments upon the above exposition of the problem of the curricula, it should be clearly understood that the present writer in no way undervalues the contribution which Professor Findlay has made to the subject, and merely seeks to bring out more clearly through the help of contrast his own particular point of view.

In the first place, after a careful perusal of the

[1] Welton, *Principles and Methods of Teaching*, pp. 42–4.
[2] Lange, *Apperception*, p. 133. [3] Ibid.

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chapters devoted to this topic, we are left with the impression that the author is assuming the very thing he wishes to demonstrate. He foreshadows this from the beginning when he describes his method of approaching the problem. 'Let us take the various motives and harmonize them,' he practically says, 'or find among them a principle which shall control all selection of studies.' Now, it might very well be that *none* of the motives hitherto used was scientifically legitimate, or indeed that these motives refuse to be reconciled. But this assumption of the thing sought is clearer when he deals with the actual pursuits. If the writer had adhered to his own declared method 'to watch men and women and children too, absorbed in all manner of pursuits', and had planned a curriculum upon these practical lines, there might be no reason to demur at this objective treatment of the problem. But the whole treatment in chapter iii wavers between the pursuits of the child and those of certain classes of adults, and we find ourselves at one moment analysing the pursuits of the 'scholar and the artist'—occupations quite beyond the range of the school—and at another moment, analysing the school time-table of the *present day*. This latter method seems peculiarly useless, seeing that it is not the principles upon which the time-table is *at present* constructed that we are seeking, but the principles upon which it *should be*.

All through the chapter upon 'Pursuits selected for Class Teaching' the writer we are discussing uses

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no clear principle of selection. To take two examples. We read: 'It may be granted that geometry and grammar are not found among the empirical interests of the young child; but it is the function of teaching to encourage the development of new fields of interest, and an older boy or girl will display abundant interest (of the kind called by Herbart 'speculative') in these abstract studies, especially if they have not been forced upon him before the mind is fitted for such exercise.'[1] Here we have very little help in saying 'Yes' or 'No' to the introduction of grammar or Sanscrit. In spite of the 'speculative interest' which the good teaching of grammar can undoubtedly arouse, it may be inadvisable to teach it to primary school children, because it may prove to be for the most part intrinsically useless. It *may* be in no way typical or representative of human activities, and when taught, never serve the purpose for which it is taught. Again, in reference to history as forming a part of the 'humanities', he says that 'we may select, out of the great drama of human affairs, those periods, events, stories for study which in themselves are *worthy*, and which are most appropriate to the pupil's stage of growth'.[2] Here again 'worthiness' is a most ambiguous criterion. Does he mean, most useful, or most ideal, or most moral? By the use of such language we do not attain clear ideas, and if there is any educational subject where we need them, it is here.

It is perfectly correct in theory to assert that the

[1] Findlay, *Principles of Teaching*, p. 63. [2] Ibid., p. 70.

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child should be taught everything on, above, or below the earth—so far as he has a basis of experience or of analogous apperceiving content to rely upon. Such an attitude, however, serves but little the purpose of guidance in selection of material.

The school has to deal only with the *typical* knowledge and activities of life. And the chief usefulness of a general psychological law such as that of apperception resides in the fact that it is a sign-post which points to very definite lines of observational and experimental pedagogy. That is to say, we have now reached a point where observation and experiment must step in to show us *when* these typical parts of the world of human knowledge, power, and feeling can be introduced to the child.

We shall trouble the reader with only one further examination of prevalent ideas upon this subject. Professor Bagley has written so much interesting and valuable matter upon educational subjects that one hesitates to express disagreement with the views expressed in his recent publication, entitled *Educational Values*. In this book he works his way towards a theory upon and an application of the criteria of school studies. He takes the aim of education to be the control of conduct for the attainment of social ends. With these ends we are not directly concerned. The acquired controls of conduct he classifies, and shows what educational function deals with each type. Thus he obtains (1) habits—which it is the 'training function' of education to instil; (2) ideas, facts, and

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principles, dealt with by the 'instructional function'; (3) ideals, by the 'inspirational'; (4) concepts and ideals, by the 'disciplinary'; (5) tastes, by the 'recreative'; and (6) attitudes and perspectives, by the 'interpretive'—a useful catalogue. He further classifies the material of the curriculum according to four types of value, namely (1) utilitarian, (2) conventional, (3) preparatory, and (4) social; an arrangement which, if it were somewhat modified, would help to clarify one's ideas upon the construction of the curriculum. However, this is not his method; he proceeds on very different lines. The various educational functions mentioned are dealt with seriatim, and a complicated attempt is made to show *what kinds of material of various value are necessary for the purpose of securing such training*. Thus, under the 'training function' the most valuable habits are enumerated—such as language, reading, manual work of various types, spelling, grammatical correctness, cleanliness, honesty, regard for others' feelings and rights, obedience, &c. Under the instructional functions, various examples of utilitarian, conventional, preparatory, and socializing material are suggested.

So far as he is endeavouring to find and to use a standard for a workable curriculum, this arrangement seems worse than useless, it is misleading. Take the habits, for example. Some of those mentioned, such as language, reading, spelling, must certainly find places in any scheme of school studies, but others we should smile to see there. What special part of

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the curriculum is going to produce the habit of obedience, or honesty? And when this question is answered, another suggests itself at once. Is it to be obedience to mother or teacher; to laws or to personal authority? And similar questions arise on the subject of honesty. It would seem more reasonable to regard specific habits as dependent upon the actual curriculum than to make the selection of matter depend upon them. In dealing with the instructional function in which facts, ideas, and principles are taught, Professor Bagley finds surprisingly few utilitarian, a few conventional, many preparatory (of which he gives not one example), and, one must suppose, very many socializing values. The main idea underlying this section seems to me perfectly true, and extremely important to the task in which we are engaged, so long as the facts, ideas and principles are not made to include the concepts of method. These stand upon another footing, their importance emerging only *after* the material of studies has been selected.

When he comes to the inspirational functions, the whole stress is placed upon the socializing values. I have already dealt with the folly of any attempt to build up a curriculum from a criterion of ideals such as 'patriotism' or 'self-sacrifice', and have sought to show that it is the business of the *methods* of teaching to attend to these. Moreover, Professor Bagley seems to have lost sight of the scientifically authenticated fact that ideals, at any rate those which pretend to any degree of abstractness, cannot

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be reached through any narrowly specific training. Useful ideals are only reached through a wide and generous curriculum, supplemented by an inspiring teacher. We are further told that the 'preceding pages have not attempted an evaluation of all possible ideals in terms of the ultimate ends of education'. As an aid in the selection of material for school studies, such an evaluation of ideals would be of no value. And on the ground of method, it is difficult to conceive of a teacher tabulating and ticking off the ideals he believes he has instilled.

Even upon the subject of disciplinary training Professor Bagley appears to me too hopeful. Although, according to him, no subject is to be taught for its disciplinary value alone, mathematics also, according to him, seems to produce a capacity for correct reasoning in general, *if* the student has gained a true idea of the 'rigid, clear-cut mathematical methods'. Enough has been said upon the poverty of the proofs for this general 'transfer'. Certainly many of our greatest mathematicians give little evidence of the power. The same idea obtrudes when he discusses a question, which, with the destruction of the theory of 'mental gymnastics', becomes quite academic—the question whether we can justify in the curriculum materials that fulfil a disciplinary function only. It is this view of mental discipline which has compelled Professor Bagley's book into the form it has taken, namely, an attempt to deduce curricula from the various educational functions.

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The exigencies of the problem seem to demand the reverse of the treatment it has here received. It is necessary first to fix values, to select the material according to the standard which has here been advocated, and then to see that their various functions are fulfilled by a method thoroughly systematized and touched with emotion. Starting, as Professor Bagley does, with these functions, he can arrive at any curriculum he chooses. He may attempt to inculcate 'patriotism' through Latin, or 'accuracy' through Assyrian hieroglyphics.

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CHAPTER VIII

THE CURRICULUM—WORK

Our examination of the methods by which the normal child comes to form concepts and ideals has led us to see the impossibility of adopting a curriculum based upon the demands of such concepts of method and of ideals—an impossibility which will, we hope, become more and more clear. We have seen that, to form even a concept of truthfulness, to say nothing of the ideal of the same quality, we need as material the greater part of life's experiences, or at any rate the greater number of its typical aspects. A concept or an ideal, to use the terms with any full general meaning, is the result of reflection upon many and varied experiences, and therefore cannot be formed by the use of any one kind of material. We do not here refer to the more specific concepts, the principles of any particular science or study; these, with certain reservations, will be drawn from one particular kind of subject-matter. But the more general concepts of method, the quasi-ideals, and the ideals proper require as their concrete foundation the whole range of man's acquired experience. In spite, therefore, of many temptations to adopt a more familiar standard, in spite of the facility with which other standards appear to solve the difficulties of the curriculum, and in spite of the use of other standards by well-known educationists, we shall

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resolutely persist in holding fast to a simple criterion, a standard which will straightforwardly answer all calls upon it, and will alone enable us to meet the great difficulty of fixing the relative values of subjects and sections of subjects.

We shall now proceed to make a practical use of the criterion which the results of our research have pointed out as the only scientific ground for choosing one kind of matter of instruction rather than another—the only criterion which, we believe, can lead to the masses of our children forming those concepts and ideals which the best opinion concurs in esteeming of surpassing importance. For let there be no misunderstanding; we can and do adopt the educational aims of 'self-development', 'self-realization', character-formation, through and in harmony with the social organization; we too aim at 'the ideal of individual and communal life'.[1] And there is no inconsistency or even incongruity in combining such an aim with the principle of intrinsic values. Our investigation has shown us that, to perform the little which the school can do in the direction of this aim, it is necessary to put at the disposal of the child the race's experience in all its broad features and so far as he can grasp it.

It would be a colossal task to attempt the enumeration of the elements of English national culture; to present a scientific classification of them would require more knowledge and presumption than the present

[1] Sadler, *Unrest in Secondary Education in Germany and Elsewhere*, Special Reports, vol. ix, p. 15.

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writer possesses. A humbler piece of work consists in the attempt to discover the outstanding features of our common national experience, to exhibit them in some kind of rational connexion, and to convert them into school language. Much of this work has already been done, so that such a task will consist less in rebuilding than in modifying the structure. For just as many a true conclusion has been reached by an illogical sequence from false premisses, so has the common sense of the practical pedagogue risen superior to his false principles, and given him curricula, parts of which will survive the application of any true test.

None the less, the modifications necessary on account of a new standard of values may be neither few nor unimportant. At the same time, the very principle we wish to make use of assures us that even a small change in the material of training may be fraught with great consequences. It therefore behoves every innovator to proceed with all caution.

The primary school child leaving school at fourteen and the secondary pupil leaving at between sixteen and eighteen may be said to receive as a rule no further formal instruction. At present, continuation school attendance is optional, and, on the whole, is not regarded seriously, so that in general the 'man' of fourteen may be said to have finished his schooling. No doubt life will teach him many things, and try to teach him many more. But for good or ill he is launched upon life with but little prospect of receiving any further systematic general instruction. The primary

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school therefore has the tremendous task of presenting to the scholar within a span of eight or nine years the best elements of the national culture, and of doing so in such a way that habits, knowledge, character, and ideals shall be built up from them. At the moment of leaving his educational home the child is supposed, we must assume, to have assimilated these chief elements. It is necessary, therefore, to ascertain by means of our criterion what material the school shall make use of in attempting its tremendous task.

In the first place, it has to prepare the child for both the work and the leisure of life. The former function has generally been recognized by the teachers and always by the parents. Full justice has never been done to the latter function. The position has some analogy with the view which considered that the chief function of the Church was to teach men how to die instead of how to live. Work and leisure together constitute life, and therefore they must both be represented in the school curriculum. There will be little hope of widening the range of ideals so as to make them applicable in both these departments of life or of making transference of power possible from the one set of activities to the other, unless the work of training is made to deal with material taken from the occupations of both work and leisure. Ordinary experience convinces us that the child frequently in thought separates his school life from his life outside the school in such a way as almost to create two personalities—the one characterized by such qualities as accuracy, obedience,

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neatness, &c., the other by their opposites. The same peculiar Dr. Jekyll and Mr. Hyde arrangement is noticeable in adult life. The person who in his business shows the greatest industry and resource, in leisure moments may fall into an almost lethargic condition and develop many of the characteristics which are born from a state of inertia. Moreover, a glance at the various ways in which the masses of the children who have left school use their leisure reveals the sad fact that in this matter they have been left quite without direction. They loaf because they have no notion how to occupy themselves; and, unfortunately, the evil effects of this stagnation of thought and action have a greater chance of transfer to the work of life than have the business qualities to leisure. For in the one case a definite and positive habit has to be acquired, and in the other only the effortless dissolution of half-formed habits need take place.

It is important, moreover, to note that the occupational side of life is necessarily narrow. The lower the type of labour, the more specific and one-sided the habits required for performing it; and when we see that four-fifths of the community must necessarily be engaged in work of this mechanical kind, it becomes clear that the training for leisure is of the highest importance. Here alone is to be found the possibility of wider life, the life which differentiates man from the rest of the animal world. It has been said that the artisan may develop a cultural kind of interest in his daily work by thoroughly understanding its position in relation to the whole scheme of labour. Although

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there is some truth in this, the fact has been over-emphasized and a great deal of nonsense talked about it. To millions, the complete comprehension of the mechanical labour they are called upon to perform would bring neither enjoyment nor greater skill, but merely discontent. In addition, such a comprehension is to a great extent beyond the powers of most of those concerned. Wider rather than deeper interests must therefore be cultivated, if assimilation of racial experience is to take place and the school is not to be marked off in the minds of the children as having little or nothing to do with real life. We are led from every direction to the same conclusion—that the school must give far more attention to the occupations of leisure, and thus endeavour to make a practical unity of experience, enabling powers acquired in the one sphere to function in the other.

The *work* for which the school has to prepare the pupils may be roughly classified as (1) the acquirement of skill and (2) the acquirement of knowledge. The former must, if it is to be general and typical, include all the representative arts, and also the bodily powers called 'physical', which are fundamental to health and complete adaptation to the environment. The Arts may be natural, symbolic, or economic. Drawing, modelling, and carving are typical of the first; speech, reading, and writing of the second; wood and metal work, needlework and housewifery of the third. The physical training must cover the wide field of gymnastics, drill, marching, running, jumping, swimming, throwing, and perhaps shooting.

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In the domain of knowledge the typical experiences of man in his social relations must be presented to the pupils in the shape of literature, history, social geography, and Scripture. Physical geography, nature-study, and hygiene are the forms through which the children will come into contact with and gain a knowledge of Nature. For the better comprehension of both the social and the natural environment it will be necessary to include some knowledge of mathematical relations; and chiefly for the clearer understanding of the former, we may have to give the primary school child some elements of grammatical knowledge.

A broad view of the domain of leisure will, I think, lead the school to undertake the double function of providing the child with opportunities for acquiring (1) a power of appreciation or enjoyment, and (2) a certain degree of skill. His appreciation may consist in the enjoyment of literature, or of nature, or of the arts. In the case of the arts, it will clearly be necessary, if the range is to be wide, as our principle demands, that music and singing, the drama, painting, sculpture, and architecture should be represented, and in their highest forms. Of the skilled pursuits of leisure the selection must again be representative; singing, a free type of drawing, sketching, painting, modelling, and carving must be included; all these of such a kind as the lover of beauty would choose to express himself in. And lastly, the physical activities of leisure and pleasure will embrace all the typical forms of play and games, dancing and rhythmic movements.

The entire scheme is summarized as follows:

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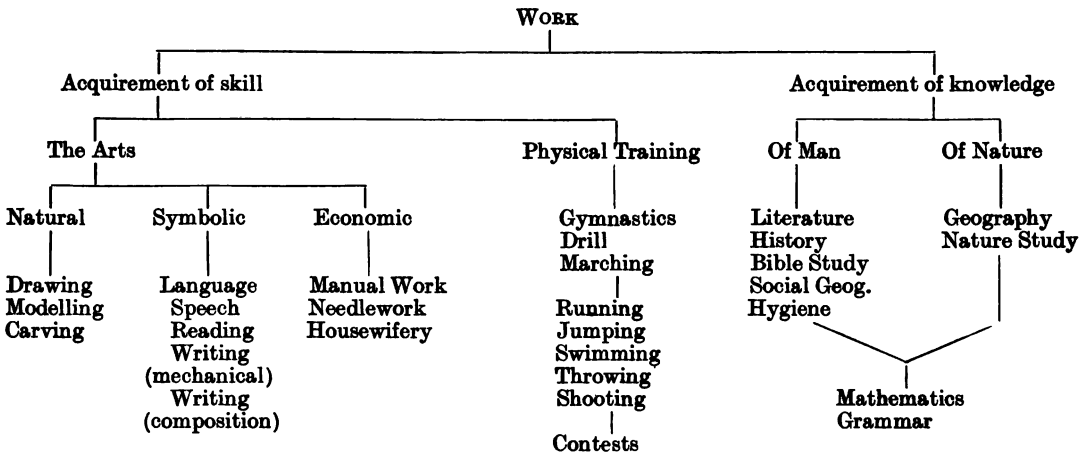

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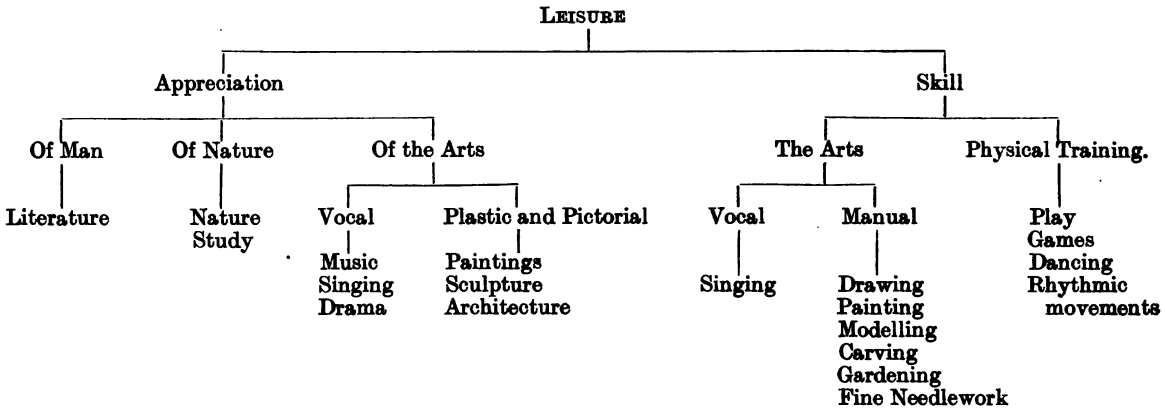

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We will now turn from the general view of the curriculum just outlined and consider with more care the concrete demands which the principle of intrinsic values makes; thus throwing, it is to be hoped, more light upon the exact nature of these demands and demonstrating the harmony or disharmony which exists between this and other principles which may have the authority of accepted laws and the respect of age attached to them.

We shall first deal with the department of *work*, and shall begin by considering that section known as physical training. To many, if not to most of our pupils, the bodily exercises appear to belong rather to leisure occupations than to work, in that they are pleasurable; yet so far as mention is made of them in this chapter they should be understood as exercises of a disciplinary kind, entailing labour and persistence. We include, therefore, movements for increasing strength as well as skill, such as gymnastics, swimming, running, jumping, throwing, and perhaps shooting; movements of teams in unison and in competition—that is, in drill, marching, squad evolutions, and in contests. The lighter and more spontaneous exercises will be considered later under the rubric of leisure occupations. It is necessary to insist upon the element of work in the physical training described, and yet it is also important to bear in mind that no serious or prolonged effort should be demanded during this growing age. It is doubtful whether at any age the body should be called upon to put forth its utmost strength unless dire

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necessity compels. An eminent authority has said that the benefits derived by the University boat-race crews from the actual contest are purely moral; that actual physical harm is involved. In Athenian education the greatest care was taken not to impose undue strain upon the bodies of the young. It is with these reservations that the physical exercises are included in the 'work' of the school. In many primary and secondary schools it would seem that insufficient emphasis is placed upon this section of school work. The time provided is quite inadequate for a form of training which not only lies at the basis of all other development and is indeed a *sine qua non* of all the rest, but which also repays the labour expended upon it in a way that no other does. For in these physical habits there are very frequently common elements which appear to be of a usable and transferable kind; for example, the power to kick a football skilfully may with no very difficult modifications be employed in the art of swimming, or the skill obtained in running made use of in jumping or dancing. Indeed, there is some evidence for the assertion that with children the concepts and ideals developed through games and contests, owing to their extraordinarily interesting and emotional concomitants, may more easily be brought to function in other domains of life than is the case with those concepts and ideals which arise from the activities of the smaller parts of the body, such as the hand, which function without involving the use of the larger muscles and are not accompanied by great emotional excitement.

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We have not yet rid ourselves of the notion that this part of school work is mere recreation, an interlude which affords reinvigoration and allows of a further period of mental application. Our attitude is often that of the mediaeval judges who carried on the torture of the 'question' until breaking point was all but reached, and then relaxed it for the victim to recover sufficiently to bear further pains. But physical training can no longer be regarded as a restful interlude between periods of severe intellectual work, if for no other reason than that it is now known to entail a considerable amount of fatigue. We are gradually coming to see the vital importance and intrinsic value of physical training. The very one-sided and specific bodily habits which must be cultivated in many of the occupations of adult life will have disastrous effects upon the whole body unless they are counteracted by the formation of these earlier and widely diverse forms of habit; the foundations of health can only thus be securely laid. The perfect action of the internal organs and even, so we are told, of the voice, can only be attained when the body is given sufficient and not too violent exercise. Moreover, when the training is made to cover a very large number of diverse movements, we approach that point where, it has been said, we have gained 'self-control'; and so long as this term is used in a limited sense, referring only to control of the body in these and kindred exercises, the statement may be taken as true. Even with these limitations, the power must be of incalculable value.

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The training must, in accordance with the principle of intrinsic values, be many-sided; the more diverse the activities which become habits, the greater the possibilities of transference. The man who has developed only one set of muscles is not only deformed, but incapable; his power is of the most limited kind and will function in but few of the manifold situations of life. The school must therefore give more time and more variety to this work and treat it with at least as much respect as it at present gives to arithmetic and grammar.

We turn now to the domain of the arts, viewed as a branch of school work; appreciation of art will be considered when we treat of leisure pursuits.

It is at length generally recognized as essential that every human being should acquire the power of representing an object or idea directly by means of the hand, either in a sketch, model, or piece of carving. It is none the less necessary to examine the grounds of this general recognition in order to ascertain whether it is a valid inference from the canon of intrinsic values.

The physical activities represent biologically the most fundamental or primordial of the forms of skill, and the arts may be regarded as their social counterpart. The former train the body as a whole and particularly the larger muscles; the latter, developing to any extent only in civilized societies, cultivate skill in special and highly organized parts of the body. For the particular purpose in view here, the arts of the school may be classified as natural, symbolic, and

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economic—the natural consisting in drawing, painting, modelling, and carving; the symbolic in speech and written symbols; and the economic in the handicrafts. We shall look first into the claims of the natural arts to a place in the curriculum.

We note at once that it is no part of the function of the primary school to produce artists. The education must be of a perfectly general kind, the curriculum containing only representative elements of the life of the community. The view that 'it is better intellectually to sacrifice ninety-nine mediocrities than to injure a single case of really original power' is, as Mr. Sadler says, not yet entirely extinct. In the days of annual examinations it was impossible to entertain it; to-day it is possible, and no doubt there is some danger of specializing with clever children to the neglect of the normal and backward. In training in the natural arts, our principle demands that to *every* child shall be given opportunity to cultivate the ability to express himself through the valuable media that nature has provided and practical necessity has developed. We do not pretend that these media of expression are as important to life as the symbolic art of speech. They are no doubt inferior, but it is none the less demonstrable that they form a typical constituent of the abilities of the man who has at all adequately adapted himself to his environment.

The State has until recently done much to encourage bookishness. By its influence upon the curriculum, it has strongly biased the choice of adult occupations.

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If the training of school life is of such a kind that the intellectual side is developed at the expense of the active, we must expect to see our pupils enter professions of the same clerkly type as their school work; we must expect to see them become either clerks or unskilled workmen. We are not, however, pleading here for that view which sees in the primary school curriculum a means of adjusting the law of supply and demand with regard to labour. Apart from a preposterous attempt to combine in this way the economic and the educational, it is necessary to readjust the balance. Hitherto the emphasis upon certain branches of study has been unfair and unscientific. The school has neglected the manual side, and having failed to develop anything like perfect and automatic control of hand movements, has often driven the child into the office because he has found himself capable of nothing else, the only manual power he possesses being that of writing. Even natural ability has doubtless often failed to survive this neglect and suppression.

Are the arts of drawing, modelling, and carving typical necessities of life? A superficial examination will suggest that they are a necessary equipment for certain trades and professions, and yet may be redundant, generally speaking, for a great deal of adult life —for example, for the business of distribution as opposed to production. Will not the agricultural labourer, the factory hand, and more especially the clerk, find the power to draw or model superfluous? This must in part be conceded so far as the occupational

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side of their lives is concerned, which is, however, only a fraction of their whole life. The world of home and leisure makes myriad demands upon these manual powers. Those of us in whose education these powers have been neglected are constantly feeling the need of them, not for the artistic purpose of expressing emotions, but in order to convey meaning, to express ideas vividly, or to put them to a private economic use. For millions of the working classes especially the possession of this kind of skill is equal to an addition to the family income. The ability to construct in accordance with an accurate sketch has no little utilitarian value. It is a well-known fact that the poor never improvise, they buy; they never mend, they replace. There is no section of the community so manually helpless.

The exclusively economic view is, however, a narrow one and need not detain us longer. Professor Dewey [1] has pointed out that the old occupations of the household and locality have passed away to give place to the factory and its divisions of mechanical labour. Before the nineteenth century brought about this mechanizing of labour, entailing a prolonged sitting posture in front of a machine, with a constantly repeated movement which soon becomes automatic, each household manufactured its own requirements, and in the preparation of these every member of the family took a more or less responsible part. For example, in the making of clothes for the family, all the necessary activities of rearing sheep, shearing, cleaning, combing, weaving, &c.,

[1] Dewey, *The School and Society.*

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were shared in by all until the finished article was ready for wear. These various operations constituted a very valuable part of education. There is no doubt that, with the increased efficiency of the product, there has gone on a decrease of power to *do* things on the part of the great masses of the producers. These masses are as a rule the unintellectual, the men and women who do not love reading. We believe that a moderate power to draw, to carve or to model, will do something to save them from intellectual death. Wood and metal work or 'manual training' (to use a technical term which has almost lost its more general meaning) may be expected to do something in this direction, but much less than the natural arts. These represent a broader life experience than the specialized handicrafts, and constitute a training ground for the intellect and imagination for which there is no substitute.

A more thorough analysis reveals the intrinsic utility of the graphic and the plastic arts in a much wider sense. No true knowledge of the form of objects is possible until the eye has become associated with the hand. The infant learns the shape of things by touching and grasping, by tracing their contour with the hand and fingers. Hardly any sense is more easily deceived than sight; it is upon this fact that the art of the conjurer depends. But the hands' movements bring certainty with them; they confirm real perception and dispel illusion. Moreover, the tendency to grasp the observed object, to bend it, break it, transform it, to use it, are to be seen in most infantile activity. The race has

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learned to subject 'Nature' to its use largely by developing the skill of its hands. Psychology is discovering every year fresh proof of the interdependence of hand and eye, of knowledge and skill. To take one example from school work. The child is asked to make a study of the oak-tree. He stands before it and tries to observe the different characteristics. He often fails to see the most salient features. Then he attempts to draw it. His observation is not only at once more definitely directed, he not only notes new and hitherto unnoted qualities, but he is able to correct certain errors of form due to incorrect observation. Or talk to the child of a Norman castle, or of the physical features of his own land, and doubtless he will acquire some valuable information; but let him draw the castle or the map, and the vague becomes definite; the facts are also much less easily forgotten. It is impossible to cultivate the apprehension of form without the co-operation of the hand. In accordance with the principle of intrinsic values, the graphic and the plastic arts must be regarded, in this less obvious sense, as typical constituents of all civilized life.

It may be necessary to meet the objection that drawing alone without the co-operation of other manual activities is capable of training the hand in the way indicated. If this is urged, we must point out what has come to light as a result of the experimental work described, that we have no proof at all that training of this one kind would affect to any considerable degree other manual activities of a distinctly different type.

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Modelling and carving we dare not neglect. Apprehension of form is even more dependent upon these than upon drawing; much of our appreciation of beauty resides in our fingers and hands. To give these skill in any general sense, training must be carried on upon a *variety* of material, e. g. cardboard, paper, clay, wood, and metal; and by means of a *variety* of tools. The most vital deduction from the investigations described and the one which is responsible for the present contribution to pedagogy is that to obtain culture or discipline of any kind from work done in the school, the training must be many-sided. Specific training rarely results in general discipline.

Nothing has so far been said of the place these arts occupy in that phase of general life known as leisure. This will be treated more fully in another place. But whether in leisure moments a person makes use of the moderate degree of *skill* acquired in school or not, we must insist that any primary and secondary education worthy of the name shall prepare pupils, to the humble degree of which it is capable, to *enjoy* the beauty of art —a good picture, carving or sculpture; and there can be no great advance in this direction until the pupil has gained some dexterity in expressing the shapes of objects in one or other of these three forms; until he has come to some true apprehension of form through the activity and skill of the hand. Just in the same way our attempts to say or write what we think and feel, increase our appreciation of the masters of literature.

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Instruction in drawing and the sister arts has had other and sometimes less reliable arguments urged on its behalf. It is easy, if we make use of a double criterion, to make out a case for the inclusion in the curriculum of every branch of human knowledge. This is impossible, however, if we only apply, as we have done with reference to the arts, the single principle of intrinsic values. The examination of general human experience clearly demonstrates the intrinsic value in life of the activities discussed. These activities are typical constituents of life's experience; they are the very warp and woof of the knowledge of nature and the world that man is engaged in conquering; and in this fact we find sufficient grounds for their inclusion in our school curricula.

One fallacious reason urged in support of these subjects we may note—namely, their so-called disciplinary value. Professor Welton's hopefulness, based upon no foundation whatever, is seen in the reasons he adduces for including wood-carving. 'Wood is indocile,' he says, 'and by working in it *the pupil learns the desirable lesson that to carry out one's purposes one must adapt one's efforts to the nature of the means one has to employ.*'[1] Unless he means that the pupil extracts from his training in wood-carving a general maxim of conduct, the remark has little meaning. The teacher's labours would be much lightened if, in real life, principles of conduct were as easily arrived at as seems to be asserted here. Wood-work in the school does not need

[1] Welton, *Principles of Teaching*, p. 499.

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this kind of support; wood is one of the commonest materials that the human hand has to do with, and the general principles of dealing with it and skill in putting it to ordinary use should therefore be the common possession of the race.

With reference to the economic arts of needlework and housewifery for girls, and handicraft for boys, there can be no room for doubt. As the child approaches the time for taking his place in the world of work outside the school, it is only just to him, and indeed necessary to any proper comprehension of that work, to bring the curriculum into still closer association with the life now appearing upon his horizon, and frequently engaging his thoughts. Boy and girl are anticipating manhood and womanhood, and are eager to accomplish adult duties. The boy must use the tools of a man, and wood and metal work provide the media for this training. As Professor Welton, however, says: 'Such handicraft should not be addressed to the acquirement of any special trade, but should be organized so as to give broad, but accurate, ideas of the general lines on which such constructions should be made, and of the uses and possibilities of the various common tools.'[1] And why not to the acquirement of any special trade? Simply because one-sided training is uneducative. 'I do not', says Herbart, 'acknowledge any instruction which does not educate.'[2] To extract general principles, as we have seen, *varied*

[1] Welton, *Principles of Teaching*, p. 499.

[2] Felkin, *Introduction to Herbart's Education*, p. 81.

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experiences are required ; only by a mature mind, and even in that case but seldom, can general principles be drawn from specific or one-sided training and straightway applied. Again, the general life of woman indicates with no uncertainty the path she will follow. As society is constituted, the masses of primary school girls will find a knowledge of the domestic arts beneficial and necessary, and for this reason alone those studies must receive justice in the school curriculum. Once placed there, we shall be ready to discuss their disciplinary value, but this will be a question of method and not of material. Their intrinsic value need not be emphasized further ; this value will be retained even if the million and a half of women working outside their homes be greatly augmented.

We come next to the symbolic arts—speech and writing, the representing of the experiences of life in symbols. There is probably no need to hammer at the point we are seeking to make that the principle according to which the subjects of the curriculum should be chosen applies here too. The arts of speaking and writing are the easiest, commonest, and most highly developed methods of intercourse ; both in the past have been the means by which experiences have been recorded and transmitted through wide fields of space and time ; both still bear this wonderful burden. By means of this almost illimitable record of the life of the world, we may vicariously undergo all manner of experiences and learn to adapt ourselves with an economy of suffering and time to the present.

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The part that an exact use of language plays in human life is incalculable. When it is faulty or insufficient, time is lost and intercommunication spoiled. Bagley appears to the writer to be wrong in spending any labour upon what he calls the *conventional* value of correct language and spelling.[1] Errors in either, if they do not obscure intercourse, have much the same effect upon listener or reader as the near bursting of shells has upon the new recruit. They distract and annoy, and so indirectly prohibit mind from communication with mind. In this way such errors as 'He done it', 'Ar'n't I?' are vicious checks to social life, and we trust to the school to eradicate them.

As an instrument of thought, language renders ideas clear and brings them under control. As Professor Lloyd Morgan points out, control usually deals with motor activities, and ideas and images, when symbolized in the motor activities of expressed words, become in this way amenable to central control. Historically, too, the growth of thought has always been accompanied by a corresponding development of vocabulary and idiom; the body of a nation never thinking beyond the low level of the vernacular. 'A gap in a man's vocabulary is a hole and tatter in his mind. . . . Words he has not, signify ideas that he has no means of clearly apprehending, they are patches of imperfect mental existence, factors in the total amount of his personal failure to live.'[2]

[1] Bagley, *Educational Values*, pp. 124–5.

[2] H. G. Wells, *Mankind in the Making*, pp. 133–4.

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From another point of view, we may see the evil effects of lack of training in this direction. Many a man is inarticulate his life long, and so unable to fit in a harmonious way into his social environment; strained and unhappy relations are the inevitable result. In history William III, and in literature Mr. Polly and Private Dormer are examples. And there is no need to go to either of these two sources for instances. Possibly no civilized nation is, in the mass, so inarticulate at the present time as our own. The stock of words of the man in the street and train is meagre and threadbare; the man's adjectives are often limited to such terms as 'ripping' or 'gorgeous', and slang expressions are made to fit all conceivable situations. Inexactitude appears in every sentence; he will call a thing 'huge' when it is only 'large'; and with him 'almost' is invariably synonymous with 'entirely'. He is frequently incapable of coherent speech, and substitutes nods or headshakes, clucking noises with the tongue, or disconnected words. Our language is to many of us a foreign idiom; poverty-stricken thought is expressed in poverty-stricken English. Nothing is more patent than that this mode of expression cannot with impunity be neglected. The intrinsic value of this instruction is unquestionable, and even Mr. Wells with all his bias against the teacher must admit that if the school does not attempt it, there is no other means. The task of the school lies clear before it, and few will contest its responsibility. It has to teach the clear, direct and orderly expression of thought by making enunciation

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as clear and beautiful as possible, and by increasing the child's vocabulary in correspondence with the development of new ideas.

We come now to that section of human experience which is more generally known as knowledge. The tendency has been to consider the acquirement of knowledge as the *only* work of the school. Health and control of the body, together with all that we understand by aesthetic appreciation, have been grossly neglected, and the whole attention concentrated upon the so-called intellectual side.

The vastness of the sphere of knowledge makes the task of selection of the greatest difficulty, and the most enlightened attempts are only distant approximations to the ideal. Indeed, if one generation could by accident hit upon the ideal selection, long before that generation had merged into the next, a shifting of values would have taken place. If the relations between parent and child, teacher and pupil vary with the course of time; if even the moral ideal is an ever-changing one; how much more must it be true that the content of knowledge will vary in its worth to the life of any civilized community.

In the last sentence we may none the less find a principle which will give practical guidance in this serious business. That knowledge which is most serviceable in the widest sense of the word must be transferred to the children in stages corresponding to their experience and development. Mr. Sadler asks what this life and knowledge are. He assures us that

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this general principle has been frequently urged, but all too vaguely. This is true, but it is certainly a gain when a great principle like this, supported by experience and psychology, has found its way to recognition. Moreover, numerous attempts have in recent years been made to reduce the principle to practice, and to establish a system of intrinsic values. With time and continued effort, we shall doubtless get near the truth.

For the masses of both primary and secondary school children this typical and representative knowledge must be such as can be applied in their common life; we have no time to waste on merely formal knowledge. And this applicability must refer to no distant date. It is of little use to accumulate facts for application at some indefinite future time. While preparing the ground for the future, we must restrain the reckless sowing of seeds out of season. As Lange says, 'It keeps a cargo of observations valuable enough in themselves in store; these undoubtedly obstruct one another, and must steadily lose in mobility for purposes of apperception—that is, the power of energetically uniting themselves with other ideas. The health of the individual life suffers if we give several years to the task of gathering ideas tending to apperception and postpone to later years the exercise of their apperceptive tendencies.'[1] We may, by the spirit and method of our instruction and our own personal influence, be fortunate enough to impress some few great principles or ideals which may function throughout the whole of

[1] Lange, *Apperception*, pp. 174–5.

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the child's life ; but so far as the *matter* of instruction is concerned, the choice will have to be limited by the child's apperceiving possibilities, by his present immediate outlook.

In the meantime what are these typical divisions of human knowledge which we must teach ? Two suggest themselves at once—the body of knowledge derived through intercourse with man, and that gained through contact with nature ; that is to say, the humanities and the natural and physical sciences. To achieve any wide acquaintance with man, some representative knowledge of his history (including facts of social geography) and literary creations (including the greatest of all—the Bible) is evidently indispensable. If he is to adapt himself most efficiently to his natural and artificial environment, the main facts and the few principles within his comprehension of physiography, botany, zoology, and physics must be familiar to the child. These are high-sounding names ; and if to them are added such others as chemistry, physiology, and hygiene, the impression might be given that we are engaged in laying down the curriculum of a Technical instead of a Primary School. The names are altogether misleading. Even the division of biology into botany and zoology will often be obliterated in actual school work. If we bring the child into sympathetic, interested relation with the world around him, with the chief empirical facts before his senses—the flowers and trees, the life in grass and pond, the winds and streams, the stars ; if we can lead him to a simple comprehension of the

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inventions of civilization, such as locomotion by steam, gas and electricity, the telegraph and telephone, printing and lithography, weaving and the chief manufactures; we shall be closely following the guidance of our principle. For the primary school child, science, understood in any strict sense, is an impossibility; and one of the happiest proofs that this view is meeting with general acceptance is to be found in the introduction of nature-study as a substitute for the nonsense taught formerly under and in the name of science.

It can nowadays hardly be conceived that the primary schools should not touch history. So soon do we forget. Statistics reveal the fact that not ten years ago, many schools completely omitted this subject. And for hundreds of years, weary youths acquired hazy notions of an alien history through their own childish translations, the story of their own people being unknown and ignored. We have not completely emerged from these dark ages, although it is now fairly generally recognized that some knowledge of the development of the English peoples is indispensable to an efficient citizen. It might seem that we should be satisfied with this and not trouble about the apparently theoretical question as to why history is so essential. But clearly we need a ground upon which we can not only decide that history shall be taught, but also what sort of history.

Is the story of our forbears given us that we may learn patriotism and other civic and private ideals?

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Certainly these may be learned from it; but let it be noted that if we select our historical material under even the partial guidance of this standard of value, the result will be that our history books will resemble, as they did not so long ago, goody-goody storiettes, on the pattern of *The Dairyman's Daughter*, or school histories of the type recently written by Mr. Fletcher and Mr. Rudyard Kipling. Let us suppose that the story of William Wallace is chosen as subject-matter. The concrete ideal here embodied is of immense importance to children, but its importance is not of the kind which necessitates this particular selection. This cannot be made the ground of the selection. For the little child, this story is preparatory to the greater story of Scotland's relations with England and to that of the general history of Scotland. In the lower classes, we choose the historical characters so as to lay the foundations of the whole fabric of our country's historical institutions and laws. In short we select the story of Wallace for the purpose of giving historical *knowledge* as a partial view of an important national experience. The spirit in which we teach those facts may incorporate inspiration with the knowledge. Professor Bagley seems to me to belittle the content and its intrinsic value. He says, 'It is not the facts and principles that the present and future generations will apply; it is rather the emotions and sentiments which these facts of history evoke in the mind of the student that will operate to determine future events.'[1]

[1] Bagley, *Educational Values*, p. 167.

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Now it seems to me unwise to set up in this way an opposition between knowledge and sentiment. The emotions and sentiments are at the beck and call of every half-witted patriot; a sane patriotism can only arise when facts of intrinsic value to the citizen life are taught with a sane fervour. We must refuse to teach the unimportant facts, even though they appear to afford good opportunities for arousing a worthy emotion. It is said that the direct utilitarian value of much historical matter is inconsiderable. This is in part true; but are we therefore to continue to teach this useless subject-matter, consoling ourselves with the reflection that it is producing excellent emotions and sentiments? The intelligent inference would seem rather to be that we should cut out such material. It must be said, however, that much that a superficial examination would reveal as inoperative in civic life and political decisions, as in that commonplace and yet much coveted matter of recording the vote, a profounder analysis would reveal as operative. It might be found that a political bias was not the outcome of a few definite and logically arrangeable data of a subject known as civics, but of much historical and literary matter seeming to possess scarcely any thread of connexion with practical politics. A proper understanding of the battle of Agincourt, quite apart from any youthful thrills, will for example help us to appreciate present-day history. And if the reader is not prepared to go so far, he will at least agree that a knowledge of the Conquest of Ireland by Strongbow will

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have some little weight in the ballot-box to-day. The threads of thought connecting my present experiences with the past are not always to be traced with the clumsy finger in the way some seem to imagine ; they are like the association paths in the human brain, which exercise a function vital to intellectual life, but are invisible.

The reformer of any historical syllabus must, if he accepts the standard enunciated, test every item of historical knowledge standing in his plan of studies ; include all that is typical and vital and therefore of intrinsic value, and, what is a far more difficult thing to do, exclude all else. He must leave to the teacher the task of dealing with the material in such a way as to obtain by the method and the spirit with which he imparts the facts the full quota of training the subject holds.

The same argument applies to literature. The subject and its several parts are not chosen on the ground that they form the best basis for the inculcation of noble sentiments and ideals. A great deal of the best poetry would on this assumption have to be excluded from the school, as for instance some of the finest lyrics. No sane literature syllabus was ever framed on the lines of those terrible anthologies which are arranged like hymn-books in sections under such headings as 'Filial Love', 'Poetry of the Family.', 'Patriotism', 'Reverence', 'Religion'. We start from quite another point. The stuff of our literature is to be selected for its intrinsic value, as representing life's most typical

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experiences. We may not choose anything but the best, that which expresses in the noblest or most harmonious language the most representative truths and needs of human nature. Myth and fairy story come into such a category; ages have polished the best of them without diminishing their correspondence with life. Originally sprung from the people, they have retained the characteristic of truth. Spurious and modern fairy stories with cruel murderous stepmothers and unnatural situations cannot be admitted. The greatest art is of course the most true.

No contradiction to our principle is involved in the further contention that certain material in prose or in poetry of the highest kind is unfit for the school because of its unusual moral ideals. *Faust, Hedda Gabler*, and other plays of the kind are not proper subject-matter for either the primary or the secondary school. But why? Simply because the matter and ideals are incomprehensible to children and adolescents. But no great experiences should be kept from children so long as they are comprehensible. Only by acting in this large-minded way will our children truly widen their experience of man and of nature; only so will they come to understand something of the complexity of their own inner experience; only so will they acquire in any degree the art of living well and harmoniously in the midst of a society whose chief types they have studied. Many a man has learned from poetry to see nature; Shelley has taught him by suggestion to find in a cloud much more than a prolonged scientific study

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would have revealed. Literature is in short the revelation of a distinct side of life, and, indeed, of an infinite number of sides. For this reason we shall include it in our school work, using in the selection of material from it the criteria of greatness, truth, and, within limits, comprehensibility.

In biblical instruction, it is perhaps permissible to suggest that only matter of intrinsic value should be put into the hands of children. There are many parts of the Bible story that might very well be postponed until after the primary school age, and others which should be excluded altogether from the instruction of both primary and secondary schools. As in literature, the principle of intrinsic values must be used with constant reference to the different stages of development reached by the pupils. There is no intention of contending that the whole of the sacred Story is not of intrinsic worth. We are employing the expression with reference to children whose experience and judgement are not sufficiently ripe. The principle of intrinsic values will, I think, lead us to welcome all those entrancing stories, those literary jewels, with which the Old Testament abounds, which widen our experience of life, transplanting us to the cradle of the race,

> . . . ' où l'homme errait sous la tente, inquiet
> Des empreintes de pieds de géants qu'il voyait,'

with its primitive customs, childlike beliefs, and anthropomorphic God—thoughts closely corresponding to the child's stage of development. On the other hand, to specify only a few examples—psalms of

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prayer for revenge upon enemies, a great deal concerning the wars of the Kings and details of the priestly ceremonies with their symbolic meaning should be excluded. Without undue emphasis upon the miraculous, let us have the life of Christ and His parables, which give us the typical life going on around Him. It is interesting to reflect that the religion which dominates and permeates the highest form of civilization to-day is founded upon the experiences of a life; other religions are mainly founded upon creeds. We have here to emphasize the fact that we must in our teaching depend far more upon the presentation of a wider and a fuller life.

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CHAPTER IX

THE CURRICULUM—LEISURE

We turn now from the arduous view of life as the battle-field of work to the field of leisure. The majority of mankind has a certain amount of leisure time; the whole of mankind should have it. Such a statement may appear superfluous, and it may also appear strange to assert that the school has anything to do with the matter. Why should the schoolmaster interfere with what does not concern him, or attempt to touch what his clumsy hand can only spoil? We have the authority of Mr. H. G. Wells to add support to the view that the school is not only not doing what it should in many directions, but that in this direction it is trying to do what it neither should nor can. Mr. Wells takes the view that play and recreation are legitimate constituents of school occupations, because they are necessary for the sake of work; they refresh and invigorate and prepare the body and mind for new endeavour. He appears to dissent, however, from the view that the teacher has anything to do with training for leisure. Contrasting this modern with an ancient view, we find that Aristotle regards the greater part of life as a preparation for leisure. 'Nature herself requires', says the greatest of the Greeks, 'that we should be able not only to work well, but to use leisure well.... Both are required,

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but leisure is better than occupation, and therefore the question must be asked in good earnest, what ought we to do when at leisure?'[1] And if it be contended that the διαγωγή of Aristotle is by no means what we mean by leisure in this chapter, it is still clear that his view was in general accord with the view here presented, viz. that the school and the teacher must educate for leisure.

There is doubtless an exaggerated way of regarding this side of life's activities expressed by the professional man who said: 'I never begin to enjoy life until my day's work is done.' Probably many more hold this view than would care to admit it; at any rate, this idea of work we shall neither welcome nor altogether repudiate.

Society recognizes in theory the right of its members to a certain amount of leisure, when, turning aside from the strenuous purpose of work, we may enjoy the present to the full and seek holiday from the distant aim. Not necessarily *dolce far niente*—although we have a right to this too—but the enjoyment of agreeable and cultured activity. Thus only can it be said that we live, and the school has its share in this part of life's education.

The activities of leisure can be divided into those of skill and appreciation. In skill, the plastic arts and bodily recreation correspond to the two orders of movement observed in work. For simplicity of treatment

[1] Aristotle's *Politics*, trans. by B. Jowett (Clarendon Press), viii. 3. §§ 2–3, p. 302.

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we shall consider appreciation from three points of view, which in real experience are by no means always separated—appreciation of man, of nature, and of art.

Skill and appreciation should not be regarded as distinct activities. We have already seen that a certain degree of skill is necessary to the appreciation of form; and as Aristotle seems a safe authority to quote, we may note that he says with reference to music, 'that they who are to be judges must also be performers, and that they should begin to practise early, although when they are older they may be spared the execution; they must have learned to appreciate what is good and to delight in it, thanks to the knowledge which they acquired in their youth.'[1]

The exigencies of school organization compel us, however, to make an exception to this rule. It is clear that only those subjects can appear in the curriculum which do not need individual instruction. Mass teaching is at present the only practical arrangement possible. Music teaching, whether of the piano or violin, is of necessity individual instruction, and therefore has no general place in the school. Moreover, it is not clear that the principle enunciated by Aristotle with reference to music holds with such force as in the case of the apprehension of form. Dr. Davidson says: 'In the objects of art that appeal to the eye we have expressions of passions only in so far as they affect the body, whereas in music we have

[1] Aristotle's *Politics*, trans. by B. Jowett (Clarendon Press), viii. 6. § 4, p. 311.

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their direct expression passing from soul to soul.'[1] Aesthetic appreciation of music would therefore seem almost independent of the power to make music. These reasons appear to be sufficient justification for including music as distinguished from singing as a subject for aesthetic appreciation, and excluding it as a subject in which to acquire skill. Something of the same distinction holds good with reference to some other of the arts. Under subjects for appreciation we shall embrace painting, sculpture, and architecture; for the purpose of initiating this appreciation, it will not be necessary to furnish practice either in sculpture or architecture.

Let us next consider an opposed but authoritative opinion upon this view of school training in aesthetic appreciation. Mr. Wells's views on most matters (and he is never niggardly in expressing them) are generally worth a close study, and, right or wrong, are always interesting and original. His views upon education are also of value as being arrived at from outside the profession; thus the subject may be supposed to stand, as it can only with difficulty to the practising pedagogue, in its true proportions as one among many of man's efforts to develop. He says: 'Equally unnecessary is the scholastic attempt to take over the relations of the child to "nature", art, and literature. To read the educational journals, to hear the scholastic enthusiast, one would think that no human

[1] Davidson, *Aristotle* (Great Educators Series: Heinemann), p. 192.

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being would ever discover there was any such thing as "nature", were it not for the schoolmaster—and quotation from Wordsworth. . . . One may present the triumph of scholastic nature-teaching, by the figure of a little child hurrying to school along the ways of a busy modern town. She carries a faded cut flower, got at considerable cost from a botanical garden, and as she goes she counts its petals, its stamens, its bracteoles. Her love of Nature, her "powers of observation" are being trained. About her, all unheeded, is a wonderful life that she would be intent upon but for this precious training of her mind; great electric trams loom wonderfully round corners, go droning by, spitting fire from their overhead wires; great shop windows display a multitudinous variety of objects; men and women come and go about a thousand businesses; a street organ splashes a spray of notes at her as she passes, a hoarding splashes a spray of colour. . . . The shape and direction of one's private observation is no more the schoolmaster's business than the shape and direction of one's nose. It is, indeed, possible to certain gifted and exceptional persons that they should not only see acutely, but abstract and express again what they have seen. Such people are artists—a different kind of people from schoolmasters altogether. . . . If the interpretation of Nature is a rare and peculiar gift, the interpretation of art and literature is surely an even rarer thing. Hundreds of schoolmasters and schoolmistresses who could not write one tolerable

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line of criticism, will stand up in front of classes by the hour together and issue judgements on books, pictures, and all that is comprised under the name of art. . . . The scholastic intelligence, succulently appreciative, blind, hopelessly blind to the fact that every great work of art is a strenuous, an almost despairing effort to express and convey, treats the whole thing as some foolish riddle—"explains it to the children". As if every picture was a rebus and every poem a charade. "Little children," he says, "this teaches you . . .," and out comes the platitude.'[1]

Having been so repeatedly knocked down under the rain of blows, the teacher, although indignant at the method of instruction pursued, would do well to retain his prone position and think over the matter as calmly as the circumstances permit. For in truth, Mr. Wells has only magnified our besetting sins; we do tend to intrude our views of nature and of art between the child and the real thing. Especially those of us who have views. We do not stand aside and watch, so far as it can be watched, the effect upon the child of a piece of real literature, or real 'nature', or a good picture; no, are we not trained to talk, and explain everything on, above, and below the earth? Is our command over the class, our confidence in the element of mutual respect and friendliness existing between us and it, so great that we can leave the child unharassed and even untaught for some minutes until questions are spontaneously asked,

[1] H. G. Wells, *Mankind in the Making*.

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and can we even then refrain from the dogmatic judgements described above? If we glance back in reminiscence along our own experience we shall discover that poetry, good literature, and great art have made their most effective appeal to us when we have been alone with them, or at least when they were unencumbered with explanatory words. We may depend upon it that it is so with children too. We will therefore take the lesson to heart, and try to do better. We will improve our *methods*, be more self-restrained, less like the fools who rush in, and we will seek to become ourselves more appreciative. But, and this is where we cannot accompany the great smiter, we find no reason in what he has said, why these branches should be cut from the curriculum. They are essential and extensive sides of life (not at present sufficiently extensive, we believe), and for this reason alone we must take cognizance of and make provision for them in the school. Mr. Wells argues that children, like adults, have different tastes, some appreciating prose, others poetry; some flora, others fauna; some pictures, others sculpture; and that therefore it is wrong for the school to attempt to lead children along uncongenial paths. Such matters, he says, must be left to the individual. We might reply to this argument that the great majority of adults have *no* special power or powers of appreciation, and that it is the duty of the school to try and remedy this. In any case, there appear to be no grounds for believing that individual predilec-

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tion for one kind of artistic material necessarily excludes the possibility of enjoyment in any other. I do not find that because a boy is fond of music, he cannot come to enjoy a large number of other beautiful things, such as flowers or poetry. We shall not force his choice, but by putting within his reach a wide range of matter, afford him the possibility of the enjoyment of everything that is beautiful in nature, art, and literature. He must be brought into contact with *all* these related sides of life. So much at least we owe the child.

The study of literature as a *leisure* occupation is to be distinguished from the literature which is included in the sphere of *work*. In the latter the reading will consist of well written biography, history, geography, travel and exploration, science, and everything which may conduce to the extension of the child's world of concrete knowledge. The materials of knowledge and appreciation will often be identical, and in making use of both kinds all the typical experiences of mankind—intellectual, aesthetic, and ethical—will be covered. Life of a wider and higher kind is to be revealed, and the chief indication that the child is entering into this new kingdom will be the degree of enjoyment that he derives from the reading. The curriculum will, of course, contain selections from great literature, and these we shall read *with* our pupils. Occasionally we shall read beautiful passages and poems *to* them, with genuine pleasure on our part, and with expression which is the outcome of personal

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appreciation and emotion. We shall also include in our curriculum a very wide range of literature from which the child may select, and which he may read for himself in school and at home.

Many of the men who have contributed to worthy literature have asserted that its predominant greatness lies in its content, in 'the quality of the matter it informs or controls', in its representation of life. This view adds force to the inference here made as to the general nature of the function of the school with regard to literature. If the hidden springs of the child's life are ever to be released; if through the arch of experience he is ever to catch a glimpse of 'that untravelled world whose margin fades for ever and for ever' as he moves; he must, by reading widely in many fields of literature, get into communion with a larger spiritual life than his own. We must, therefore, see that the curriculum is here broad and generous, and that the selection is of the very widest kind as to both content and form.

It is evident from this point of view that one very important aspect of the syllabus of literature is quantitative. Love of good reading will not germinate in the hearts of our pupils from the occasional and thorough analysis of a few great selections or books. This type of work occupies far too much space in the German primary schools, and possibly in our own. It seems tolerably certain that the majority of those persons who have no taste for the best reading, or even of those who find no pleasure in some particular

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literary form such as the drama, or the lyrical poem (and most readers are specialists), owe this deficiency to the fact that they have read but little in these directions. 'L'appétit vient en mangeant' is a proverb of unusual dignity when used in this setting. To all but the inherently dull and base, good literature will make its magnetic appeal if a fair chance is given. But where the curriculum is confined to the dissection of some few literary selections of genius, no fair chance is given. With obedience to the conditions of width and variety, school training in literary appreciation may still have in the school unthought-of possibilities before it.

Although we are not directly concerned here with methods of teaching, it is necessary to allude to them in order to avoid misunderstanding. The more thorough treatment of selected prose or poetry spoken of above is an essential part of the process; only it must not usurp the rôle played by general reading. Just as the fuller appreciation of pictorial art depends upon a lover-like study of some specific examples, and the birth of such appreciation often takes place upon the suggestions of a more aesthetically developed mind, so the minuter examination of literary masterpieces by a teacher possessed of common sense and imagination may cause the quickening and growth of the child's appreciation. An analysis conducted by such a teacher and carried out by the pupils of the content of a poem; of the structure which, determined by and shaping the content, strikes the particular

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key; of the linguistic form and diction which harmonize like a succession of musical chords,—all this is sometimes necessary to the revelation of the imaginative atmosphere which haunts any literary production. Such a glimpse of beauty may attract the child to search for and read and study other literary masterpieces. Rather, however, than do such work badly, it would be infinitely better to abandon the pupil to general and private reading. In either case, our literature syllabus must be large and catholic.

It is to be hoped that no educational authorities will attempt to examine such school activities. Let them examine the syllabus with regard to quantity and quality as much as they please, and even see that a minimum has actually been read, but let them refrain from the construction of a scale of artistic appreciation. Subtle and incalculable as starlight, it cannot be assessed.

One characteristic of a good literature syllabus has appeared as an inference from our main principle in this short investigation of literary appreciation. The curriculum must show a thoroughly generous selection from the field of literature, a selection of the widest kind both as to content and form; it will have to be large and varied just because collective life has the same attributes.

We can now conveniently make a brief examination in connexion with literary appreciation of a view which has been put forward with all seriousness with reference to the whole of this attempt to do something

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for the training of aesthetic appreciation of literature, music, and the plastic arts. Every scientific principle has passed and continues to pass through the ordeal of being tested by fresh facts; and new facts or even *a priori* reasoning might perhaps demonstrate that it would be dangerous to put this inestimably valuable side of life into the school curriculum, or at least advisable to confine it within very narrow limits. We are warned by Mr. Keatinge that moral dangers lurk in this aesthetic training, dangers so great that unless the necessary precautions are taken, it would be better to omit these branches altogether. 'Like all explosives and motive forces, feeling needs to be restrained and kept within limits. . . . In the case of feeling, the dangers are even more alarming and scarcely need mention in detail. Languorous sensuousness and tumultuous explosiveness are among the giants of the tribe.'[1] And again: 'Unless moral training bulks as big as aesthetic training; unless, indeed, the two are merged in one, the training of the feelings on which so much stress has been laid may be disastrous, or to put it more prosaically, should not be subsidized by State funds.'[2]

If there is anything in this view, then it is indeed a risky matter to attempt to deepen and refine the life of feeling. Let us consider the question for a moment from the side of literary feeling. We assume

[1] Keatinge, 'The Moral Dangers of Aesthetics in Schools' (paper read before the College of Preceptors), *Educational Times*, April 1, 1912. [2] Ibid.

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naturally that our selection of a syllabus is a representative one, containing nothing but great art, and harmonizing with the apperceptive powers of the child. Such conditions will exclude the horrible, terrible, morbid, and gruesome.

'Reason', Mr. Keatinge says, 'is not strong enough to act as a control when feeling acquires an overwhelming strength;' and on the other hand, 'the continual control of the feelings by the reason, especially if the process begins early in life, may be too powerful; the feeling element may wither away, leaving as a result the man who is guided only by his reason, which is only one way of describing a person who for essential human ends is very limited.' Spinoza's maxim, that passion is killed when looked at and examined, gives some support to the latter statement, and our own experience confirms both.

Mr. Keatinge, therefore, seeks outside of reason the cures of this evil. He finds them *firstly in the socializing of the feelings, and secondly in practice in the technique of the particular art.* 'If an art is pursued and if excellence is attained in it as a form of social service; if it is felt that the capacity for artistic feeling is a gift, that it must be exercised not for the sake of the individual, but of his surroundings; if it is linked on to and aids the struggles of the society towards some worthy goal, the danger is lessened. The delight that Fra Angelico took in his colour schemes can scarcely have tended to sensuousness, neither can the devotion to church music of the mediaeval monk, nor

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the joy of cathedral architects and builders in their handiwork.' As regards the second cure, he says: 'A second, and an equally efficacious one, is the insisting on strenuous effort in all aesthetic production or appreciation.'

We believe first that the dreaded danger is for the school practically non-existent; and second, if it is at all present, that the alleged cures are upon wrong lines. It is a favourite pedagogic fallacy to over-estimate the influence of some special branch of the school studies. We have seen in the preceding chapters how narrow is the influence of specific training. The real danger lies not in over-influence, but in failing altogether to stir the imagination and emotions. If the attempt to do so is too open, it fails; if it is too delicately hidden, again it fails. Practical teachers will smile at the vision of an aesthetically-voluptuous boy. Mr. Keatinge has in view throughout his article a cultured few who are absorbed in art or who live almost entirely in the realm of feeling—people of the type of Richard Jefferies. Equally unlikely are we to witness the tumultuously explosive effect of aesthetic appreciation. The warning appears to me much as if we should caution an aviator not to go too near the sun.

Assuming, however, the possibility of such maladies, we think the suggested palliatives are useless. The emotion excited, it is true, must be socialized; not, however, in the sense that the *art must be practised* for the good of society, but that the *content* may be

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to some degree idealized and made to apply to the child's conduct in some sphere of actual life. As Professor James says: 'Every time a resolve or a fine glow of feeling evaporates without bearing practical fruit is more than a chance lost; it works so as positively to hinder future resolutions and emotions from taking the normal path of discharge. . . . The remedy would be, never to suffer one's self to have an emotion at a concert without expressing it afterwards in *some* active way. Let the expression be the least thing in the world—speaking genially to one's aunt, or giving up one's seat in a horse car, if nothing more heroic appears—but let it not fail to take place.'[1]

Such application of a literary content has nothing whatever to do with the attainment of excellence in the art as a form of social service. It is clear that the writer, by keeping his eye exclusively upon the artist instead of the school-child, has entirely overlooked the direct socializing effect of the *matter* read. A different kind of error appears when he deals with the second cure. He urges strenuous effort in all aesthetic production or appreciation, and adds: 'If a tone of strong endeavour permeates the feeling complex, it is difficult to see how softness . . . can arise.' I can see no danger of any such alleged softness arising from the enjoyment obtained through reading, say, a beautiful lyric poem; or if danger there be, we dare not seek to obviate it by dispensing with the

[1] James, *Principles of Psychology*, i. 125–6.

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very requisite for all such enjoyment. It is just by action of this sort that many a teacher destroys literary feeling. Strenuous effort is by no means a predominant element in literary or in any other form of appreciation. Let me quote from Mr. Crothers: 'The first essential to the enjoyment of poetry is leisure. The demon Hurry is the tempter, and knowledge is the forbidden fruit in the poet's paradise. To enjoy poetry you must renounce not only your easily besetting sins, but your easily besetting virtues as well. You must not be industrious, or argumentative, or conscientious, or strenuous. I do not mean that you must be a person of unlimited leisure and without visible means of support. I have known some very conscientious students of literature who, when off duty, found time to enjoy poetry. I mean that if you have only half an hour for poetry, for that half-hour you must be in a leisurely frame of mind.'[1] This is a very different thing from Mr. Keatinge's 'strenuous effort in all aesthetic appreciation'.

For practical school life, it cannot be said that practice in the technique of literary composition or verse-making is of any use in directing or controlling the feelings excited by the reading of literary masterpieces. The most that can be said for such exercises is that they will, if properly handled, enable a child to enter *more fully* into the artist's world of thought and feeling. But it is the function of the very matter which excites the emotion to keep it within the

[1] Lloyd Morgan, *Psychology for Teachers*, p. 265.

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prescribed limits, and direct it. All great literature on the child's level of development does this. *Wide* reading will do much in bringing about the necessary counterpoise and balance, enabling the child to distinguish between the essential and the non-essential, and resulting in a sense of humour and a sane view of life.

If we examine the aesthetic training given by the teaching of singing, we shall find still fewer traces of moral danger. The effects of music are, it is true, more sensuous and more direct than those of literature, in that they reach the listener without the aid of symbols. On the other hand, they are generally more indefinable and vague and certainly less permanent. Music has to receive a new birth each time the effects are felt, and very few persons and still fewer primary school children have opportunities of hearing good music at all frequently. Good music is, in fact, for the great majority of occupied persons, almost inaccessible. When we add to this the frequently poor choice of song, the smallness of the number learned, the insignificant amount of time allowed for the subject, and the serious curtailment of this through the teaching of dried-up theory,[1] we need not, I think, have the slightest fear of any moral danger arising in the form of languorous sensuousness or tumultuous explosiveness. Moreover, the possibility of feeling in the realm of music does not appear to depend upon knowledge of the technique, because it is a natural as opposed to a symbolic art;

[1] Under Dr. Borland's able direction, much is being done in London to make up for these deficiencies.

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and certainly the little skill in technique acquired in the school can make but little difference.

The philosophers of ancient Greece, if they could see the kind of training given in this subject in our primary schools, would, I hope, agree with this view, although it is well known that they attributed great power to musical sounds. It must not be forgotten, however, that the Greek nature was far more open to such an influence than is the Anglo-Saxon; that their music frequently associated instrument, words, and dancing; that their religious worship was permeated with chant and singing of many kinds and occupied an incomparably greater part of their life than it does in ours. They therefore had very much firmer ground than we for this belief in the powerful influence of music. It is perhaps worth noting that in the Bacchanalia, in which the influence of music was most marked, a great deal of wine was drunk, so that it may have been difficult to distinguish the two effects. In any case, modern investigations into the results of training would lead us to think that the Greeks may have over-estimated the power of music.

In the same way we cannot believe in the existence of moral danger in training aesthetic appreciation of the plastic arts. If it does, however, exist, neither the socializing of the feeling in the sense understood nor strenuous effort in appreciation will be effective.

It has been foreshadowed in the last remarks that part of the leisure time is to be spent in actually hearing good music and singing. If we are to use singing for

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the purpose of inducting the child into an important phase of complete living ; if it is to be used to cultivate taste ; then we must supply the opportunities by which alone the child can come into contact with the best models. Doubtless before long, we shall do regularly what at present we do only spasmodically. All children over a certain age will have regular opportunities of attending concerts where they will hear, not the often unmusical music of their fellows, but instrumental and vocal music of a high order.

Further, in accordance with the general principle, it will be necessary to widen and enrich the child's repertoire of songs. If singing is to be considered a typical leisure occupation, then we ought to teach the children a large number of songs. Five or six per year is a forlorn minimum ; there is no reason why he should not learn at least twenty. These should be of varied kinds, and the selection as well as the teaching of them should be in the hands of the expert member of the staff. If the harassed teacher asks what time there is to do all this, one thing may be remarked, namely, that in England we aim at teaching all children to read music. In Germany, where the people are considered musical, this is not done, at least in the primary schools. They thus have so much the more time for the learning of many beautiful and simple songs. We, on the other hand, are inclined to sacrifice aesthetic feeling to skill in technique ; as a matter of fact, the latter matters but little ; the former is all-important.

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As regards the plastic arts, we have also to keep their twofold value in view. The child will find keen enjoyment in the activity of artistic representation—in drawing, painting, modelling, and carving. There is a work side to these occupations, involved, for example, in an understanding of the principles of perspective and of the ground forms of regular solids, and in the economic applications generally. In the freer use of such knowledge there is, however, a possibility of keen aesthetic enjoyment. Above and beyond both the work and leisure occupations of this kind there is the education to be derived from *seeing* beautiful things—beautiful pictures, sculpture, and architecture. Hitherto the school curriculum has reserved no space for these. Again, there is so little time, and funds for travelling expenses would be necessary in the case of many schools. The difficulties are not insuperable. Many schools could, even under present conditions, do something in this direction. If the school pictures only were utilized after an artistic selection had been made, and measures taken to let the children examine them; if for class purposes the splendid and cheap reprints of famous pictures, as used in a few schools of Hamburg and other German towns, were put into the hands of the children, and if an occasional lesson were given by a teacher who loves pictures; if these means and others were used, we might hope to help a little to counteract the grossly bad taste so often exhibited. Visits to picture-galleries, to museums containing originals or models of great sculptors' work, to buildings of architectural

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merit, will soon, it is to be hoped, form a regular part of the school life of the town child, just as they do of the life of any cultured person. Renowned among the nations for our general lack of critical judgement in matters of taste and decoration of all kinds, we have a vast field of delicate and necessarily slow work before us. We have not yet touched the fringe of such a reform. One has only to consider the treatment of the children of the very poor who, living in the midst of the most squalid city on earth, have the greatest need of a beautiful and simple school building, of furnishings and equipment generally, which may do something to refine. These children are more grossly neglected than all others in this matter; the bright and aesthetic school building and furnishings appear to be reserved for the better-class scholars of the suburbs, and to a more significant degree for secondary school children. There are primary schools in the central districts of London that ought to be demolished at once if there is anything in the view of aesthetic training put forward here. The schools of the very poor should contrast strongly with the unrefined surroundings in which they live. Some of the more recent school buildings of Finland and Germany bear witness to the fact that these demands can be met without emptying the public purse. The so-called playground will one day be planned with as much care as Goethe used in laying out the ducal park at Weimar. At present the very mention of such things is received by the general public with derision.

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Nature-study should bring the children into contact with whatever forms of nature they have at hand. Some at present have very little. Municipal trams and railway companies will one day give every facility to teachers and their classes, making not grudgingly small reductions, but granting free conveyance to such *bona fide* expeditions. And in the appreciation of nature, as of art, the effect will be largely subconscious. We have no desire to convert these journeys into 'personally conducted tours', where the teacher points out what he considers the beauties to be noted. That is the very way to impede the effect of contact and companionship with nature and art. The teacher, controlling his natural impulse to instruct, should depend upon suggestion, and that of a very discreet kind. Here is not the place for instruction ; nine-tenths of the aesthetic effects will be by-products of the child's study of the things themselves.

We have now arrived at the last of the leisure occupations—that of physical recreation. It is necessary to call to mind the distinction that was made at the beginning of Chapter VIII between work and leisure. The same distinction was maintained in Greek education, where gymnastic was regarded as essentially different in its aims and results from physical culture. The former was said to give character to the acts of the body, the latter character to the body itself. Play, games, dancing, and rhythmic movements are spontaneous activities, not making great demands upon strength or endurance ; they are calculated to produce

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suppleness and confer control of the whole body rather than specific development of certain muscles either for strength or skill. Our main principle gives us the following view of the matter. The best kind of life which is at the same time possible to all can only be lived by the man who not only has a healthy body, who not only has at his command certain specific bodily powers, such as drill movements, running, jumping, throwing, swimming, and others, but who has the whole body under the perfect control of the will, whose body is the perfect expression of the mind. In Greek education the musical and literary side of training was combined with gymnastic by means of dancing, which was said to exercise the whole human being, body and soul, and in a completely harmonious way. Plato himself foreshadowed organized games in his curriculum for young children.[1]

There is need to insist upon the school's function in attending to this side of life. We are by repute a nation of sportsmen, but the facts upon which this reputation is based have been exaggerated.

It is probably true that a greater proportion of our boys and girls play systematic games than those of any other nation; but it is equally true that a greater proportion waste time and mental energy in looking on. In the south of England we have very little conception of the mass madness of football spectators which reigns in the north. Tirades of press and pulpit against such evils are ineffectual. The only hope lies in the schools,

[1] Davidson, *Aristotle* (Great Educators Series), pp. 144–5.

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and fortunately hardly any other subject is receiving more attention at the present moment. Some of the training colleges are alive to the importance and educative value of such work. Hitherto we have in the primary schools laid stress upon drill and so-called physical exercises; games have done something for a certain number of scholars to redress the balance. But the whole subject needs reorganizing; we need to include all scholars, particularly the feeble and timid. Specific training in one or two games like cricket and football is not sufficient, even if it were possible to make all take part. Dancing and rhythmic movements must be added. They are more efficacious in giving general control of the body, and they lend themselves easily to class teaching.[1]

In so far as the principle of intrinsic values applies, it is necessary to say a word or two upon a different type of error. The public schools are at present trusting far too much to the 'discipline' of sports. A false conception of their value has led some schools to assign a far too important place to what is, after all, only a specific and highly specialized pursuit. We are told on good authority that the boys 'translated their head master's exhortations into pure Spartan, interpreted his "moral thoughtfulness" as a kind of stern, heroic athleticism, and treated work, meals, and sleep as literally interludes—mere necessary pauses between a game and a game'.[2] We are further told by the

[1] Hulbert, *School Music Review*, 1911.
[2] Newbolt, *The Twymans*, p. 107.

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same writer, a public school boy himself, that 'in such a way of life there is much to raise inquiry, something perhaps to excite the humour or the indignation of an outside critic; but when all is said the system is a preventive of many maladies and the cause of only one'.[1] There is, however, nothing to excite humour or any other sentiment but regret that the school should so misconceive its function and allow the curriculum to be so disastrously one-sided. It is pleasing to read another and very different opinion expressed by another public school man of no less repute. Mr. A. C. Benson has arrived, by means of natural insight, at the same conclusions with regard to specific training as the present writer, who reached that point of view after lengthy experimental work. In dealing with the question of *esprit de corps* he gives expression to some valuable asides upon the training to be obtained from school games. 'We take for granted', he says, 'that if we can develop it (*esprit de corps*) in a school, it will continue in after life in the form of good citizenship. But I think that is by no means the case. . . . One of the radical mistakes often made in education is to believe that, if one teaches young people the principles of one art or accomplishment, they will instinctively apply them to other and larger subjects. That is not the usual result; geometry is a logical science, but one does not teach most boys logic by teaching them geometry, but only the logic of geometry. And I am not at all clear that

[1] Newbolt, *The Twymans*, p. 107.

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by teaching boys the lesser patriotism of school and college, one teaches them the larger patriotism of nation and race.... Looking back at my own education, it seems to me that I left school believing in athletics, overvaluing correct tone, trusting in social influence, with mild literary tastes, utterly and blandly unaware of the real forces and problems of the world.'[1]

After reading the above one may reasonably feel greater confidence in one's own views which agree with it. The rubbish that has so often been uttered with reference to 'the playing fields of Eton' and of other public schools had, by dint of repetition, become so incorporated with our common beliefs that we were in danger of losing the power of judging such matters. We know now that the discipline of school games is generally of a narrowly specific kind; that the concepts of conduct drawn from such games are usually narrow and concrete, and that real life has a crying need for other types of concept which games cannot furnish. The time spent so lavishly upon games, so far as it is used for attaining such conceptional ends, is therefore largely wasted.

It is pleasant to note that ideas are changing and that this important topic is now receiving, in our slow English way, more attention. We have seen that by means of our principle it is possible to strike the happy mean. By neither under- nor over-estimating the

[1] Article upon 'Esprit de Corps', *Educational Times*, August 1, 1912.

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value of such training, and by getting rid of the fictions that have surrounded it, we arrive at the simple categorical truth that it is the duty of the school to give to all scholars some idea of the beauty of harmonious movement, and what is perhaps of still greater importance, a power of control over the whole body, evidenced in a gracious and noble carriage.

In conclusion, it is not pretended that the suggestions as to the school's training either for work or leisure are altogether novel; for they are already on the way to partial acceptance. Psychology has taught us that children's power to transfer habits from one domain of activity to others is all but nil; it has shown us that the formation of concept or ideal and its application from one material to another are attended with many difficulties, especially for the young. We dare not trust to the bare possibility of such a transference, and are hence logically compelled to place in the school curriculum all typical material of life. This is the teaching of psychology as we understand it. But quite apart from this teaching of psychology, the experience of teachers has led them to the same results; and the last few years have witnessed the introduction into the curriculum of various new subjects conceived to be representative of the experiences of life. Some of these were doubtless unworthy of a place in the school. The present chapter has described a renewed attempt to find the typical. Even if these were perfectly chosen, they could not remain permanent; for the curriculum will always be fluid, never fixed.

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There seems every reason to believe, however, that the principle which insists that life shall be mirrored in the school, will never be abrogated. In the application of this principle the writer may have failed; but the emphasis upon the principle cannot but be beneficial to the school and its curriculum.

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CHAPTER X

MODIFICATIONS OF THE CURRICULUM

THE problem before us now is to ascertain in what way the principle of intrinsic values is affected by other conditions. The law of gravitation is acting upon the cricket ball just as fully when it lies caught in the hands as when it is falling into them. The interposition of other conditions in no way abrogates the law. In the same way, when we come to apply our own principle, it will probably be found necessary to enter into rather more complicated calculations than the simplicity of the law would lead us to expect. We cannot but notice that, although the whole of typical life in its many-sidedness must so far as possible be brought into the school, although the child's interests are to be limited only by space and time, conditions are so diverse as to necessitate some variety in the application of the principle.

We must first of all note the overwhelming importance of the child's immediate environment, of the life in which he moves. Nothing is more certain than that we must begin with material which lies close to the child's own experience. Unless this is done, only inadequate assimilation of the less immediate, and still more inadequate assimilation of the distant environment, can take place; there will be no possibility of living concept or ideal. Nevertheless, a caution is

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necessary here. It has been said that the function of the school is to make each child 'familiar with the thoughts, actions, and feelings of the people who surround him '.[1] As a beginning, as a point of departure, this appears to be quite true; but the beginning must not be taken for the whole. The immediate surroundings do not constitute the whole environment of the child; for this has its ramifications in the most distant parts of space and time. The material which is in immediate contact with the child is to be used as a jumping board; he too has a need and therefore a right to his 'Grand Tour', even if he has to do it, like Oliver Goldsmith, on foot. It is true, however, that the material close at hand is the core and also the starting-point of the curriculum. It becomes difficult from this point of view to understand how such a theory as that of Culture Epochs can be usefully applied to the practice of education. For the essence of that theory consists in postponing the presentation to the child of the phases of present-day civilization until he has passed through the antecedent racial stages. Any theory which lays stress upon the immediate environment and is based on a rational psychology enjoins an almost contrary procedure. Lange, Voigt, and others have sufficiently criticized this doctrine of Ziller and the later Herbartians, so that we need not weary the reader with the repetition of what can be found in detail in their writings. Without doubt the Herbartians

[1] Welton, *Principles of Teaching*, p. 34. Professor Welton does not, however, take this limited view.

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are not foolish enough entirely to invert the natural order—that of beginning with the immediate environment, and of leading the children gradually to take an interest in, and so to learn to understand, times and places far removed. If they are wiser in practice than in theory, so much the better. But we have to consider the implications of their doctrine, which must certainly be condemned for this inversion.

Education must consist largely in working back from the present to the past, from the near to the distant. The speed with which Nature reacts hurtfully to ill-adjusted adaptation compels the child to acquire certain kinds of knowledge and certain specific habits early. In seeking to do this we need not waste time in trying to lead the child through all the stages of race progress. He shall, so far as possible, take short cuts and avoid much of the pain and groping which fell to the lot of his ancestors.

In a sense the curriculum is concerned *only* with the present environment. All knowledge is brought to bear upon the present; all capacities are tested and made use of upon the immediate environment. The experience of others recorded in literature and history, and the nature of distant places and peoples recorded in geographical writings, serve to explain the present environment and to give a fuller meaning to it. But mere scraps of past experiences and vague ideas of distant natural phenomena cannot enlighten the present, for in that form they themselves are incomprehensible. The child should first become acquainted

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with the present through actual contact with it; he deepens this acquaintance by a sequential study of the past. Unless this study is in some degree scientific he cannot understand the past, and, as a result, the past and remote can throw no light upon the present. The necessity of supplementing the child's generally limited and fragmentary experience, of bringing before him in history, literature, and other subjects completed wholes of experience, is one of the chief grounds for the existence of the school and its organized curriculum, and is at the same time the reason why it is useless to lead him along the same uncertain path as that followed by his ancestors.

In choosing the material of instruction from these two realms—the immediate and the mediate environment—we have to consider the application of the principle of intrinsic values to several different cases. As representative we shall select (*a*) differences in mental development, (*b*) social differences, (*c*) local differences, (*d*) differences in the leaving age, and (*e*) differences in the type of school.

(*a*) With reference to the varying degrees of mental development observable in children we shall here say but little, confining our attention to a few general points.

Age usually corresponds to certain well-marked differences in the content of knowledge and in capacity. Not always, however; there are many cases in which development has been abnormally slow or quick. There has been a very distinct tendency in recent years

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to force the pace with both of these types. The result has generally been either to make the dull still duller, or to form one-sided minds. All the evil effects of specialization and formal training have followed this tendency. The slow child has been compelled to shine in one or two subjects by neglecting other parts of the curriculum, while the opposite type has won scholarships and glory by pursuing the same course.

As a theory, it has been a generally accepted dictum since the days of Froebel that school studies must be graduated and suited to the particular 'educand'[1]. In practice we often fall far short of the principle. If it be true generally, as Dr. Quirsfeld of Bohemian Rumberg asserts of the school-children of that town, that twenty-one per cent. of first-year scholars (from 6 to 7 years old) decrease in weight during that first school year by about six pounds, and another twenty-five per cent. show no increase whatever;[2] if this, or anything like it be true, then it is tolerably certain that the schools must be disobeying this dictum. The lack of hand-work and games in the lower classes of the upper school, even if it does not succeed in reducing the weight, dulls the wit; there are too many dull children, and for many of them our teaching is responsible. Reading, for example, is still taught to children who are much too young to be plagued with it. In some schools the process may be made tolerably

[1] Correlative to 'educator', a term invented and frequently used by Professor Adams.

[2] Lay, *Experimentelle Pädagogik*, p. 30.

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interesting; in others it is deadening.[1] In the too early introduction of grammar or in the too detailed study of it, in some of the science work years ahead of the conceptual capacity of children, and in the forcing process necessary to the teaching of much of the arithmetic, we can find quite ordinary cases of a neglect of the dictum. One of the most baneful examples may be found in the teaching of arithmetic in the infant school. Here, where the powers of active or voluntary attention have scarcely yet appeared, where for this reason symbols are still clothed in the picturesque imagery of their concrete illustrations, and where, therefore, there can be little or no conceptual thought or logical reasoning power, little children of five or six are sometimes encouraged to deal with numbers and to wrestle with their relations to one another in a way that is more suited to a child of ten. If number is to be taught to children so young, then a great part of the work should be mechanical and memorized. Mr. Ballard is to be congratulated upon a courageous attempt to put an end to this nonsense. He points out that although these mathematical infants have an arithmetic lesson each day for forty-four weeks of the year, they only master the numbers 2, 3, 4, and 5; and he further indicates the directions in which the time

[1] In one reading lesson the children spelt each word of the text three times, the spelling being followed by a kind of reading which repeated each word three times, so that poor 'Tom Tom Tom got got got his his his bat bat bat'. No wonder weight diminishes by means of this shrivelling process.

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and energy occupied in the mastery of these numbers could and should be more usefully employed.[1]

The most strongly marked characteristic of modern curricula and methods is the demand which they make upon the power of conceptual thought. Classes of children who in nature-study are young enough to find complete mental occupation in *observing* the external characteristics of ordinary plants and flowers are bothered and bewildered by experiments to prove that these breathe; that the sap rises through a certain part of the stem; and that light, warmth, and moisture are essential to their existence. They are harassed by long and careful explanations about gases they have never been aware of, and by logical accounts of *why* the leaves fall in autumn. I have seen class-room tables present the appearance of a wilderness of glass cylinders and test-tubes to illustrate some of these points, and other classes engaged in suggesting unheard-of experimental methods of elucidating some point in the growth of plants which was really beyond them. Most of the facts mentioned are certainly worthy of a place in the school curriculum; but there is a great need to grade them suitably to the proper period of school life. The intrinsic value of the facts themselves is under-estimated, and far too much importance attached to the conceptual training which it is hoped will be derived by means of passing through such logical sequences. There is a perfect passion for making the children 'think'.

[1] P. B. Ballard, *The Teaching of Mathematics in London Public Elementary Schools*, 1911.

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Instead of storing the memory during the period when memory is the predominant power with facts for the after-exercise of the judgement, we feed these poor children upon a highly diluted mixture of fact and thought. It always takes some time to realize, even very superficially, a fact; and hurrying forward the thinking process as we do, it is to be feared that frequently the so-called 'thought' has no content.

We are passing through an educational period in which some knowledge of a fact is despised unless its exact relations with other facts are understood, unless a very advanced form of conceptual thought accompanies it. Even in the history lessons the teacher rarely ventures to tell the simple tale to children without ascertaining with deadly certainty that the comprehension is complete and logical.

There is very definite need to overhaul our curricula and review our demands upon the child. We need a very general change in our views upon the intrinsic value of certain facts with their *incomplete* connexions. They have a real working value. Every educational principle needs constant revivifying at its source, and that one which urges the transformation of fact into faculty is no exception to the rule. There are, it is true, two sides to every question, and a notable case may be made out for the increase of thoughtfulness among our pupils; but it is equally necessary to use our knowledge of their capacity and avoid anticipating powers not yet in existence. The too early introduction of matter involving powers of thought not

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possessed by the child is the cause of physical debility, distaste for study, and dulled wits.

(*b*) The next step in our inquiry is to discover whether our principle sheds any light upon the question as to whether school curricula should show any variations to correspond with differences in the social grades of the children attending them.

In its general application to the curriculum, the principle is unconditioned. The education of children of all social grades must be wide and liberal. There must, for instance, be no suggestion of dropping this or that subject as being the source of future discontents or social upheavals. Every child not only has an equal right to the intellectual inheritance of the race, but cannot do without it. The concepts and ideals of greatest importance to the community will remain inaccessible to the democracy unless this width and liberality of education are obtained and maintained. The next few centuries will probably witness the struggle of the masses of the people to share the greater comforts and luxuries and leisure of life; and the nature of their ideals and attitudes of mind will largely depend upon the curriculum of the primary school. If as children they are introduced to the best knowledge and culture of the age, even although, as must be the case, it is *only* an introduction, the struggle will be progressive and not revolutionary and full of set-backs. Labour and capital will only arrive at general accommodation and harmony when the narrowness and ignorance of their representatives are things of the past.

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A scientific and sympathetic education is the only means by which Society can reform and rejuvenate itself without a cataclysm.

The teaching of the three R's was formerly nothing better than an extreme type of formal training and specialization, made more evil in its effects by a system of examination which kept the instruction rigidly within those specialized limits. There is little danger that we shall ever return to those conditions. None the less, it has to be realized that although we are living in a period of great educational activity, it is only the dawn. Hampered as we still are by the moribund theory of formal training and its consequences, we have little conception of what a system of education can do when based upon scientific estimation of intrinsic values.

A few pages back we had occasion to note that the immediate environment formed a very important constituent in the education of the child. If this be correct, then will not the variety in the environments corresponding to the social grades exercise considerable influence in determining the curriculum? This aspect of the question may modify the general view just considered. For the core of experience to which all new knowledge has to be related exhibits differences. This is true; and if we were to attend merely to that fact, each child would have a plan of studies for himself. But we recognize that many of the differences are unimportant, and also that, where the differences become greater, our business as teachers is to present the knowledge in several ways, thus catering for the

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different experiences of our pupils and at the same time often doubling the points of contact. The environmental variations of children under twelve do not on the whole seem sufficiently significant to warrant any vital changes in curricula. There is a common background containing the typical characteristics of English boy and girl life, and to this we can appeal. Up to about the age of twelve, we deal with the fundamentals of a common English human nature. After this age the differences become accentuated. The ripening of the conceptual powers results in the formation of special interests and remote aims. The primary school child's mind begins to be occupied with his future employment.

The question of curricula for children beyond 12 will be dealt with later. As regards children below this age, we must note certain environmental variations which do seem sufficiently important to affect curricula. It will not be necessary to consider the extreme cases of children who live on the borderland of society where cold and hunger are frequent visitants. It is clearly not syllabuses, but food and clothing, that are wanted here. Among normally conditioned children there appear to be two types of environmental differences. Children belonging to a particular social grade differ from others in possessing a particular mental background as a result of living in a certain kind of environment. This background, however, may contain all the typical elements of a common national life ; and in this case no difficulty exists. What disadvantages arise can be overcome by intelligent adjustments of the methods of teaching.

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On the other hand, children belonging to certain ranks of life differ from others in possessing not merely particular mental backgrounds, but backgrounds in which some *necessary* elements are almost or altogether wanting. Books, music and nature are typical examples. The school must therefore adjust its curriculum to meet such cases. The amount and kind of reading matter, of singing and of nature-study, will vary from the common standard. Some rough readjustment of the balance must be made ; emphasis must be laid upon the missing elements. It is sometimes sad to see with what little respect this principle meets. The maxim which bids us prepare the pupil for the life he will have to live is sometimes strangely metamorphosed into that of ' where ignorance is bliss, 'tis folly to be wise '. If there is any section of the child community which needs a palatial school, large playgrounds and gardens, good books, music, and nature-study, it is that which lives in the slums. Nature-study, music, drawing, handwork, and literature should in these cases be regarded as more important than a few beggarly grammatical rules or a useless array of arithmetical puzzles. It has been said that literature is the means not only of understanding life, but also of escaping from it ; and education generally has the same double function. We shall confer a far greater boon upon the poorer children in opening up many avenues of imagination than by preparing them thoroughly to live the mechanical life awaiting them.

(*c*) A different emphasis will also be placed upon the

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rural child's school work. The first task of the teacher will be to deepen his pupil's interest in this environment. There will be no need to create an interest—every child is interested in the life going on around him—but merely to deepen this interest by aiding him to comprehend more fully. And this comprehension will as before become the starting-point of a wider knowledge, and furnish the possibility of entering into experiences not confined to the locality. Something has been done in recent years, and is rightly being done, to give the country child a greater knowledge and appreciation of country life and occupations; but it would be a calamity if this were done at the expense of the wider experience, which is also indispensable. Social unrest and immigration from country into town are, after all, the expression of the democratic desire and need for a wider life, and should not be made the pretext for a lop-sided education. It is none the less true that the nature of the curriculum is of great influence in deciding the future vocational life of the child. In the French higher primary schools an over-emphasis upon the literary side led many quite unsuitable children into professional careers, and a readjustment which reduced this emphasis resulted in an immediate decrease in the numbers of those choosing clerkships.[1] The ideal is to have neither over- nor under-emphasis, but, basing the sequence of both teaching and curriculum upon the child's experience, to give him, so far as the school is

[1] *The French System of Higher Primary Schools*, Special Reports 1896–7, vol. i, pp. 328–9.

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able, freedom of development by means of a varied and liberal curriculum. The State has no right in primary education to take any account of the law of supply and demand for certain occupations. The commercial and industrial, the political and religious needs of the State must not be used to subordinate the child's free development. It is true that the State is interfering more and more with the education of the child and with parental control, and it appears to the writer to be a progressive tendency; but it must not be forgotten that this is being done *for the sake of the child*. He is not to be regarded so much as a means to an end as an end in himself, and even the perfecting of the social organism is to be looked upon as only a means of individual progress. The function of the State should therefore be limited to the provision of all forms of instruction and to their proper supervision. It will see, so far as it is able, that every child has the opportunity of a training suited to his personal aptitudes, and will leave the task of settling the choice of occupation to the individual himself and to the fluctuating conditions of world-production and distribution. It can publish these variable conditions for the information of parents and prospective pupils; but by no manipulation of curricula or promises of supposititious advantages may either State or municipality influence or persuade children to enter one occupation rather than another. It is, in fact, just as essential that the rural child should know something of town life as that the town child should become acquainted with the country. When as

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a nation we have become educationally wiser; when, too, the means of transit are in the hands of the nation; the school will be able more and more closely to mirror real life by actually coming into it; the trams and the trains will at certain times, according to the possibilities of the district, be full of school-children setting out after the necessary preparation to obtain a first-hand acquaintance with a lake, a forest, a mountain, a castle, a church, a factory, a paper-mill, and a thousand other things, ideas of which all the talk of the most eloquent teacher in the world would fail to convey.

The moment in school life may arrive for giving a vocational bias to the instruction, when a degree of specialization will be necessary; but every care must be taken that it shall not be anticipated and become a means of keeping the child in that social or even local position 'in which it has pleased God to place him'.

(*d*) We come next to the problem as to how the application of our principles must be affected by the leaving age of the child. The subject is surrounded with the greatest difficulties, amidst which educationists are still groping. The whole problem of what is known as 'specialization' is involved. The great difficulty consists in the harmonizing of two apparently clashing demands—first, that in accordance with the laws of mental growth a wide and liberal education should be provided, and, second, that the child's interests, which exhibit a growing tendency to concentration, and therefore appear to be at variance with those laws, should be adequately consulted. The interests and occupations

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of the future life outside the school begin to cast their shadows before them. There is, of course, no real opposition between the two demands, for both of them may be inferred from the principle which was arrived at as a result of our investigations, namely, that the school should mirror life in that real and yet diagrammatic way which omits everything but the essentials. It is the business of the educator to discover the harmony and establish the compromise which fulfils both demands.

So long as life lasts, every man must struggle both for and against specialization in his own development. Neither the poet nor the artist can escape this law; indeed they fulfil it in a way the ordinary person cannot. The great poet specializes in his art, but his poems palpitate with many-sided life. His theme, and the poetic form in which he clothes it, may be limited and specific, but both are interpenetrated with the infinite concrete experiences of life.

The educator, too, must struggle, both for and against specialization. In other words, he must arrive at the establishment of harmony between broadening and narrowing tendencies. While we now know that concepts of method and ideals can only become of wide significance and find general application when they arise out of and receive constant renewals of vitality from widely diverse and concrete experiences, we shall not forget that the chief domain of their *use* lies in that narrower world upon which the child's interests soon begin to converge.

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In one way the child's experiences and interests broaden and need broadening; in another they concentrate, they tend to focus in certain points. It is true that the child's mind *always* needs some sort of concentration area; but this need is generally *felt* by him only very vaguely or not at all. At the stage of development we are here assuming (roughly the age of 12), when the future no longer appears entirely in the form of timeless images, but is characterized by being referred to an approximate date, and gathers clearness as that time approaches, the child's centre of interest tends more and more to focus upon the life before him; he tends more and more to feel the need of this concentration. Moreover, it is about this period that he begins to give reliable signs of his powers. In a very large number of cases it is now possible to decide whether he will be numbered among the great mass of the unskilled, among those who enter factories or mines or at any rate will perform work of a mechanical nature, or whether he is of those who, possessing higher capacities for conceptual thought, will belong by right to the smaller class of skilled workmen and professional men. When this point is reached we shall find it necessary to make use of the distinction between primary and higher primary schools. The children who give evidence of these greater mental powers should now be drafted into the higher types of primary or into secondary schools.

The curriculum of the last two years of the child's life at the primary as distinguished from the higher

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primary school will be modified to suit the changed conditions. At this time our pupils are, outside school life, assimilating more and more of the experiences of adult life ; and if the school is to do living work it must present the fundamentals of these experiences systematically, at the same time escaping that narrowness which only too soon enchains the spirit of the normal adult. The curriculum, as it has been outlined in Chapters VIII and IX, with its emphasis upon the bodily activities, will already have done something to familiarize these children with the common pursuits of life, and by further stress in the same direction may do much to minimize that lop-sidedness which the future occupation often produces. It would be a waste of energy to anticipate the particular sphere of labour, since little or no skill is required and much more valuable work lies at hand. But there is great need to do what can be done for the child without reading proclivities, to prevent mental stagnation and the other effects of continued and unvaried mechanical toil. The change in his interests forbids us to continue after the age of 12 upon the same general lines. We must follow the child into the world of new interests he is entering. We shall not obtain the best from him if, for example, we attempt to make the last part of his school work chiefly revisional. ' There is observable ', says Mr. Ballard, ' particularly in some districts, a steadily growing tendency to make the last year a recapitulatory year. The whole arithmetic course is reviewed and a large variety of problems are set bearing on the experiences of

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everyday life. This practice is wholly commendable.'[1] There is nothing to quarrel with in this view; but generally speaking, and outside of arithmetic, *new* ground should be broken and wider interests cultivated. The view of life taken at 12 years of age is quite inadequate for the citizen of a democratic community. Drawing, woodwork, metal-work, physical exercises; common everyday arithmetic and practical geometry; the comprehension of the construction of ordinary machines such as clocks, sewing machines, steam, petrol, and electric engines, &c.; a practical acquaintance with our staple manufactures,—these are some of the special subjects upon which he should fix his attention. The child will thus be concerned with processes in which his hands are either actively or in imagination engaged. History, too, should be supplemented by a very simple course of civics; and in geography special attention should be given to the practical side—the immediate environment, the colonies and sources of information concerning them. The earlier nature-study in animal and plant reproduction should now be specialized in the form of sex hygiene.[2] Only, therefore, in this wide sense can there be in the ordinary primary school any so-called specialization.

It is next necessary to inquire in what way our

[1] Ballard, *The Teaching of Mathematics in London Elementary Schools*, p. 16.

[2] It will be unnecessary to deal with sex hygiene in the primary school, when attendance at continuation schools has become compulsory. But until that time arrives, we dare not leave our pupils ignorant of such essential facts.

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principle must be applied to those schools giving primary instruction to children whose leaving age is as high as 15 or 16. For the most part pupils of such schools will be of better mental calibre than those of the ordinary primary schools. They will probably have been selected from contributary schools, partly on account of examination successes, and partly through consistently good work during their school career. Very occasionally at 12 years of age children begin to exhibit certain *special* tendencies, or a bias in particular directions. The growth of a centre of interests, accompanied and promoted, as it naturally is, by development of the activities belonging to those interests, may serve to indicate to the parent or teacher the broad nature of the boy's bias—commercial or industrial, scientific, or perhaps literary. Frequently, however, both when the previous education has been one-sided and when it has been wide, the ordinary child is of so unstable a nature that a temporary may be taken for a permanent centre of interest. This difficulty is sometimes overlooked, with a resulting loss both to the individual and to the community. Experience seems to show that even such a broad choice as that between the commercial and industrial cannot safely be undertaken until about the age of 14, and even then should not be left entirely to the child, but decided chiefly by parent and teacher. Nothing but good can accrue from postponing the time for deciding what definite occupation shall be followed. When the decision is reached and the child has two or three years more of

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school life, the curriculum must be modified once more to suit the new conditions. Dr. Gow has said that the best possible course to follow is to give boys a good general education up to the age of 16. An excellent plan, provided they have still a year or two in which to specialize. It seems clear that, if we are to make the new life at all comprehensible and interesting, if we are to provide the best opportunities for the development of valuable concepts and ideals, *the curricula of such schools must show a distinct vocational bias as well as general and varied characteristics.*

The aim of the French higher primary schools is explained in the words of the circular issued by the French Minister of Technical Instruction as follows: 'Parts only of the curriculum are devoted to "professional" instruction, and these have for their object simply a preparation for an after apprenticeship.'[1] And again: 'Higher primary instruction is immediately recognizable by its undisguisedly practical and utilitarian character. In that general sense it is "professional". But it remains in a true sense "education"; it must not be confounded with apprenticeship. It is a school, it is not a workshop—pupils are to be found there, not apprentices. . . . They combine in the most intimate way the completion of a general education with the commencement of a professional one.'[2]

[1] *The French System of Higher Primary Schools*, Special Reports, 1896–7, vol. i, p. 364.

[2] Ibid., p. 367.

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In our own regulations we read as follows: 'The curriculum must have for its object the development of the education given in the ordinary Public Elementary School, and the provision of special instruction bearing on the future occupations of the scholars, whether boys or girls. A curriculum will not be approved unless it provides, together with this special instruction, a progressive course of study in English Language and Literature, in Elementary Mathematics, and in History and Geography. Drawing and Manual Work for boys, and Domestic subjects for girls, must be included in every case as part of the general or special instruction.'[1] There is little doubt that the establishment of primary schools with curricula framed upon these lines is in accordance with pedagogical principles, principles derived from a study of the way in which the child assimilates and applies ideas.

It might seem to be but a further application of the principle of specific values to teach special trades and professions. Our investigations suggest that if we consider merely the future occupation, specific attention to and training in it would be the only certain way to acquire the most perfect skill. No amount of practice in manipulating wood will produce a skilful iron-worker. Why not, therefore, go straight to the aim, and having ascertained the trade the boy or girl will enter, train him or her directly for it? But, as Professor Adams says: 'The present well-justified opposition to early

[1] *Code of Regulations for Public Elementary Schools in England*, 1909, p. 19.

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specialization arises not from any fear that the method is bad for the profession or occupation, but because it is held to be bad for the human being concerned.'[1] But could not the evil effects of this early specialization perhaps be neutralized by a curriculum which contains in addition the general school subjects? Our main law, which demands that the school should in a wide sense mirror life, could perhaps be guarded by the retention of the general subjects, thus providing, in addition to instruction in special trades, a liberal education.

An attempt to do something of this kind has been made, and is now going on in the French industrial and commercial primary schools (*Écoles pratiques de commerce et d'industrie*). In the circular previously mentioned, the statement is made that these schools 'have a distinctly different character (from that of the *écoles primaires supérieures*) which it may be well to indicate with some precision at this point: they are destined to turn out commercial employés and artisans ready at once for the desk or the workshop. . . . We should not, of course, for a moment contest the benefits of a good *general education*; it is a solid basis which increases a man's worth and renders more profitable whatever technical knowledge he may have acquired. *Nor is there the least intention of proscribing it in the école pratique.*'[2] In a typical syllabus[3] for industrial

[1] Professor Adams, *The Evolution of Educational Theory*, p. 242.

[2] Special Reports, vol. i, p. 364.

[3] *Programmes-Types des Cours des Écoles Pratiques de Commerce et d'Industrie*, p. 2.

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schools of this kind, issued by the Ministry of Commerce and Industry in 1909, the attempt to combine a general with a very specific aim is well shown :

	1st Year.	*2nd Year.*	*3rd Year.*	
			1st Period.	*Last Term.*
	Hours.	*Hours.*	*Hours.*	*Hours.*
Moral instruction	½	½	½	—
French	3	2	1	—
History and geography	2	1	—	—
Outlines of industrial economics and labour legislation	—	—	1	—
Outlines of industrial book-keeping	—	1	—	—
Industrial hygiene	—	—	—	1
Arithmetic and algebra	3	2	—	—
Geometry	3	2	—	—
Physics and chemistry	3	1½	—	—
Outlines of mechanics	—	—	2	—
Outlines of industrial electricity	—	—	1½	—
Applications of theoretical instruction according to the industry	—	—	2	3
Drawing and outlines of descriptive geometry	6	7	7	7
Practical work	20	23½	28½	38
Technology	1½	1½	1½	
Supervised private study	6	6	6	2
	48	48	51	51

In 1887 Monsieur Buisson wrote : 'Technical instruction ought to be spread everywhere in France, and should reach the whole of the nation; it must not be the monopoly of some dozens of masters and of some hundreds of pupils. It is to be desired that it shall become one of the essential factors of our popular education, and that wherever there may be found a collection of children of the age of *twelve* who intend going in for agriculture, trade, or business, there

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shall be found at hand an agricultural, industrial, or business school, properly organized, adapted to their requirements and suitable for helping them to attain the end which they have in view.' [1]

It is interesting, in connexion with the desires of M. Buisson, to observe that eleven years later, in 1896, there were still only twenty-one schools of this kind throughout France. On the whole the French people have, therefore, rejected this type of highly specialized instruction.[2] For apart from the narrowing influence of a school composed of one class of pupil, an influence which in England did much to minimize the practical advantages of the pupil teacher system, and which is noticeable to-day even in adult pupils, such as those of training colleges and medical schools, there is always the difficulty of happily adjusting the highly specialized and the more general parts of the curri-

[1] Special Reports, vol. i, p. 363, note.

[2] Since the above was written, and quite recently, another attempt has been made in France to extend this type of school. M. Labbé, General Inspector of Technical Education, has summarized his views in a triple formula :

1. For the mass of workers the apprenticeship should be passed in the workshop.

2. But apprenticeship at the workshop should be enlightened and completed by the institution of ' cours de perfectionnement '.

3. For certain callings, the apprenticeship can and should be spent at the school, in order to form a picked body of industrials indispensable for the proper working of the workshops and factories. Committees of Departments have already been formed, and it is expected that a new law will shortly be passed to give the necessary powers for the establishment of such schools. Some of the proposed schools appear to resemble closely the American Business College.

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culum. The child needs a wide curriculum until he is well into the period of adolescence, and while it is true that every specialized occupation, every trade or profession, is a part of, and has very real relations with, the broadest human culture, yet the difficulties of constantly holding these relations before the mind increase almost in proportion to the narrowness of the technical aim and the youth of the pupil. Thus while *general* manual work in all its varieties may be interconnected and interwoven with the so-called cultural subjects, it would be difficult and perhaps impossible to work out satisfactorily the connexions between, say, general literary and historical work and the technicalities of the machine-room. Schools of this kind, too, encourage the child to choose a definite occupation years before any one can know whether or not he is suited to it. In the above quotation from a speech by M. Buisson, he makes this theoretical blunder, and the 'Écoles pratiques' make it concrete. Their experiences and our own should prove useful when in England we come to establish some definite kinds of primary schools with a vocational bias. At present the whole question is in the experimental stage. No one knows, for example, what final form the London Central Schools will take. A little theorizing based on a safe principle may therefore still be useful. We have seen that the professional schools encourage a too early choice of the life-work; and while it is possible to exaggerate the personal harm occasioned, it is certain that to make the economic

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machine work as smoothly as possible we must avoid forcing upon a large number of children an alien type of experience, and a distasteful or unsuitable profession. And further, unless these vocational schools were in very close relations with the great firms representing the various trades and professions, the balance of supply and demand of specific kinds of labour would be constantly upset, with all the attendant evils of unemployment as a result. But this very close connexion with the firms would have grave educational disadvantages. Such firms would tend to exercise more and more influence over the curriculum, gradually eliminating every element of a wide and liberal education. Tendencies in this direction are already noticeable in some of the higher primary schools. Even if we grant, therefore, the advisability of teaching special trades and professions to pupils of this age, we shall see ourselves confronted with the enormous difficulty of making such training 'educative'. But there are other objections.

Quite consistent with the view of training here taken is the conviction that the general concepts of method which arise from a varied and systematic course of handicraft, together with the numerous dexterities acquired in such work, can be applied with comparative ease to the industrial workshops having narrow and technical aims; and the same may be said of the curriculum which provides a general and a commercial course without instruction in any particular business. Where common, usable elements

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exist of such numerous and important kinds as, say between the woodwork of the school and that of the joiner or cabinet-maker, or between general business methods and those of any particular business, transference of power through a conceptual process should be easy. *Hence, the new view of specific values does not really involve early specialization.* Unfortunately, too often business men demand from lads fresh from these schools the technical knowledge special to their own particular business. They can, of course, obtain this by continually voicing these demands, but it is at the sacrifice of future efficiency. It is quite easy to train boys to be able to fill a post demanding a kind of hole and corner dexterity, but it is far less easy to give them the wider view of general business principles and methods which will enable them to become intelligent and useful co-operators. The truth is that these business men are victims of the old delusion of formal training—of the notion that a thorough training in any one subject should fit a man for anything. When they find that it does not do this they complain of the schools. Other employers who have definitely relinquished their hopes of formal training, do not ask for this intelligent co-operation; they demand the mechanical accomplishment of a specific task, and insist on getting it. Hence there is the same pressure upon the schools from both classes of employer—a pressure which we see to be altogether unwarranted.

If, further, as we have insisted, the theory of specific values is supplemented by that of concepts of method

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and ideals, we have an educational principle which will lead us to attach far more value to those elements which are necessary to the higher life of all than to those which are special to one trade or profession. 'Training,' as we now understand the term, is not the easy matter it was formerly supposed to be; and to place in the way of children between 12 and 15 years of age a hindrance to general culture, such as instruction in a specific industry would be, is to court utter failure. A qualified specialization or vocational bias is as far as one should go. The more exact extent and nature of this bias will depend on a number of complex conditions, and can only be concretely ascertained by careful experiments undertaken in all parts of the country.

From the results of the experience so far gained in primary schools of the higher type, an amount of useful information bearing on the organization of this branch of education has already been obtained. At present, owing partly to the lack of connexion between school and workshop, and partly to the lack of intelligence displayed by employers of labour, the latter either do not know what work boys from these schools are capable of, or if they do know, still make use of them merely for menial and utterly unskilled tasks. They are put to odd jobs when they are ready for better work. In addition, and through the same want of understanding, children who continue at school and receive this higher primary instruction, find themselves in a position in the same workshop or office inferior

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to that of the lad who failed to obtain a place in the better type of school, and has therefore not had the advantage of two or three extra years of thoroughly practical schooling. The same occurs constantly in the case of girls. A certificate showing that a child has received this advanced instruction, and enumerating the branches of study, should obtain for such a pupil greater consideration at the hands of employers of labour, and a preference over the less talented and less instructed child. But employers are not the only awkward or ignorant persons; frequently the workmen themselves have not only discouraged, but prohibited, good work done by boys trained in general manual work.

There is, however, a greater obstacle to success in intelligent specialization. Children rarely stay to complete the full course of four years. It is with the greatest difficulty that a fair proportion are persuaded to remain until 15 years of age. The remedy is hard to find. A much more definite hope of later recompense—some adequate reward for a child who completes the course—would do something to help, and the granting of small scholarships would be some inducement to parents to keep their children at school as long as possible. From this evil many others follow. Choice of branch, whether commercial or industrial, has to be made too early. Parents do not, and probably cannot, know for what the children are best fitted. Between the eleventh and twelfth years of life, it is frequently not possible even for the teacher

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to come to any conclusion upon this point. It would be difficult for a teacher who has followed the pupil's career for several years; it is altogether absurd for a teacher to attempt it who has only just become acquainted with him. Parents select the branch on account of some altogether fanciful idea of the child's capabilities or from their own prejudices and wishes; head teachers of 'Central Schools' consisting of two branches are influenced in their choice by the exigencies of class numbers. It is no secret that in some schools of this type which have commercial and industrial sides, the children are told, on the first morning of their attendance, to consult their parents and inform the head teacher next day of the result. Many parents, having no ideas upon the subject, fail altogether to respond, and their offspring are therefore drafted into the commercial or into the industrial department, according to the necessity of organizing the school into classes of about forty. The small and the better-dressed, well-spoken boy is selected for the commercial; the big, ill-clothed and ill-spoken lad for the industrial. And under the circumstances, what wiser, or rather less foolish, plan could be adopted? There is at present no alternative to this uneducational procedure. The remedy will be found in securing a later leaving age, making the first and perhaps the second year course purely general, and at the end of this course assigning the branch to each child, as is done in the *écoles primaires supérieures*. Not only is the choice of occupation made too early, but the actual

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specialization is begun before the child's mental development demands it. In an earlier part of this chapter, reasons have been adduced to show the pedagogic value of deferring this early specialization.

(*e*) It only remains to observe how the two principles of specific values and concepts of method affect the curriculum of lads who will leave the primary to enter, by means of scholarships, secondary schools In this matter we have in England something of which we may be moderately proud. Neither in France nor in Germany is there anything to compare with it. The possibility of passing from the primary to the secondary school, and afterwards to the university, is open to nearly every boy of ability. There are, however, certain directions in which the present-day scholarship systems tend to run counter to the principles we have tried to expound. There is, for example, a very real danger that the work of the primary school may be subordinated to this aim—that, namely, of obtaining as many scholarships as possible. It is hardly to be expected that teachers will refrain from seeking to gain laurels of this kind. As a result, the work of the primary school may be warped in this particular direction. The non-scholarship children may be neglected, or those who give early promise of becoming likely scholarship holders may be too narrowly trained. There must be a strong temptation on the part of the teacher to over-emphasize the subjects set for scholarship examinations, and so indulge in a pernicious form of early specialization. When, as

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in London, the children are examined in only two subjects—arithmetic and composition—there must be a powerful incentive to introduce too exclusive a form of specific training in these branches. Even where the examination is not allowed to interfere with the general curriculum, and the specialization takes the apparently harmless form of constant homework in composition and arithmetic, disadvantages follow. The stress thrown upon such confined branches of instruction is positively harmful in that it reduces the opportunity to enter upon wider fields of experience. And further, it results in the winning of scholarships by many who are not fitted for higher instruction. If our investigations have proved anything, it is that a specific training is the best means of producing a specific habit. There is, therefore, no doubt that special training in composition and arithmetic will produce better examination results in those two subjects than a great deal of more general instruction. The choice of the two subjects is probably as good as any for testing what has been often very inaccurately called 'general intelligence'. There is by this time a considerable and perhaps sufficient amount of data to show that, in spite of the apparent narrowness in the range of subjects tested, the children of a particular school who deserve the scholarships get them. That is to say, the opinions of individual teachers upon the respective merits of their own pupils, and the total results of those pupils' class-work, correspond in a surprisingly close manner with the examiner's

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order of merit. So far the working out of the system seems eminently satisfactory. There is, however, another side. It is clearly possible to obtain such high correlations from individual schools and at the same time to apportion the scholarships to the whole body of schools most unfairly. Actually we find this to be the case. Some schools obtain as many as thirty scholarships, others none. Variations between these limits, showing also the strongest contrasts, are common. Now it is most unlikely, even incredible, that talent should be distributed through the London schools in this way. A truer test (omitting for the moment other conditions) would prove that ability is distributed fairly regularly, and if results obtained by other methods of selection were pooled for a few years, would demonstrate this fact beyond doubt. The question therefore arises as to why the present scholarship examination system exhibits such uneven and unfair results. No doubt one factor is to be found in the conditions of life, in the home surroundings. The child of parents who are comfortably off has in many ways better opportunities for study than his poorer competitor, and the better-class schools therefore obtain the greatest number of successes. The personality and skill of the teacher also counts for a great deal. But neither of these factors is decisive, and neither of them can be eliminated. There is, I think, little doubt that the unevenness in the distribution of awards is very largely due to specialization. The children who are to sit for the examination

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are specially coached in these two subjects, and the amount of coaching varies widely in different schools. There is no need to enlarge on this point; teachers will understand. Until some system is found which will counteract this, we shall continue to waste public money and the abilities of the most able children. We have no brief against the teachers responsible, but desire to point out the evils it leads to. The narrowness of the specialization, carried on as it is sometimes for years, cannot fail to produce all the evils which usually accompany an attenuated curriculum. It is yet another example of formal training, and of the inability to comprehend the necessity of a liberal education. No wonder that so many of these scholarship holders are in the secondary schools weighed and found wanting.

It ought not to prove beyond the ingenuity of man to find some method of obviating this great difficulty. Evidently there is need of some agent who can hold the balance in a group of schools, who can by frequent visits to all the schools of a group become well acquainted with the ability and work of the best of the scholarship candidates. He would thus have the knowledge requisite to a true comparison. Such work could apparently be best done by a council inspector, especially since another important part of his duty would be to see that the two examination subjects were not specialized, and that the general curriculum in no way suffered.

The accidents of the examination itself could then be much more justly remedied, and a far greater

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certainty achieved that the right children obtain scholarships. Those would then be excluded whose gifts are not great, and who under present conditions succeed in reaching the secondary school by means of what may be regarded as an early apprenticeship.

Of the question of the relation between the curricula of the primary and the secondary school, so far as it concerns the boy or girl passing from the former into the latter, only a brief treatment is possible. One of the reasons why the primary school lad is said to fail so frequently in the secondary school is doubtless due to the possibility to which we have already alluded, that the best children often fail to obtain the scholarships. Another and important ground exists in the lack of sequence between the studies of the two kinds of schools. Just as it has been urged that the primary school must be self-contained, having no purpose in view but the training of the primary school child, who will leave at fourteen, so it might be urged, with a show of equal justice, that the secondary school must not adjust its curricula for the few who enter by means of the side door. It must not be forgotten, however, that the number who do this must tend to increase until probably the side door becomes as large as the main porch. If it could be shown that on certain broad lines it would be educationally better for the secondary school child to have the same basis of knowledge and powers up to 11 or 12 years of age as his friend in the primary school, then the difficulty for the latter in his upward path

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would be greatly reduced, with an actual accretion of good to the secondary school child. We have already given some reasons why there should be little or no differentiation in this respect between any children up to the age of 12. The question, however, is too wide and important to be treated at all adequately in this place. It deserves the fullest consideration of educational experts. On the whole, little thought has been given to it, although it promises soon to occupy a position worthy of its importance. So far as the principle of specific values and concepts of method offers any guidance, it can only be decided in one way, namely, by a common curriculum for all children up to the age of 12. The question of the 'common school' is by no means identical with it. The one will probably come into being long before the other.

It is interesting to remark tendencies in this direction, one of which we shall expend a few words in dealing with. One of the greatest hindrances to the easy passage of a boy from one type of school to the other is to be found in the fact that in the secondary school the scholar begins to learn a foreign language, or even languages, before the age when the primary school child enters. The most recent memorandum by the Board of Education upon modern language teaching points out this difficulty and a common method of meeting it. It says: 'Many schools in which the form is the teaching unit for languages, and in which the first foreign language is normally begun at the age of 10 or 11, have experienced special diffi-

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culty in meeting the needs of those ex-elementary school pupils who enter at or about the age of 12. The difficulty is often successfully overcome by temporarily grouping them in a special division, where they receive intensive teaching in new subjects in which some progress has already been made by the other pupils. It thus becomes possible to draft them after a short interval, commonly of a term's duration, into the forms in which, but for the absence of the necessary elementary grounding in these subjects, they would have been placed on admission.'[1] Collating the facts which show to what extent the difficulty occurs, we obtain the following :[2]

	French. *yrs.*	*German.* *yrs.*	*Latin.* *yrs.*	*Greek.* *yrs.*	*Percentage of Elemnty. Children.*
Clifton Coll. (Modern Side)	9·3	14·8	Classical side not given		—
Perse School, Camb. (Boys)	9·1	14·7	11·11	14·7	15
Leeds High Sch. (Girls) .	9·5	14·1	11·4	16·1	7
Bolton Grammar Sch. .	10·4	14·11	11·9	14·11	50
Colchester Royal Gram. Sch.	10·4	14·9	11·5	14·9	?
Sydenham: Co. Sec. Sch. (Girls) . . .	12·4	14·9	14·9	None	50
Holloway: Co. Sec. Sch. .	11·6	13·5	13·5	,,	66
Middlesex: Tottenham Co. Sch. . . .	11·8	13·7	13.7	,,	83

The above figures show the ages at which the tuition in the various languages begins.

N.B.—German and Latin or German and Greek are alternatives, so that in no case is a pupil learning more than three languages, and in the last three schools only two.

[1] Board of Education, *Memoranda on Teaching and Organization in Secondary Schools*, Modern Languages Circular, 797, p. 14.

[2] Ibid.

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This table gives evidence of an interesting tendency. It would seem, broadly speaking, that the greater the number of ex-elementary school children entering the school at 12, the later is the time made for beginning a modern language. It does not seem, therefore, that the postponement is the outcome of any pedagogical principle, but rather a matter of expedience and experiment. Where the primary pupils enter at 12, and are some months or even a year behind the others as regards a language, it is apparently possible by intensive teaching during or after school hours to bring them to the level of those who are their natural class companions. But where the amount of retardation is greater, the organization must be difficult, and the pupil's ill adaptation permanent.

If, therefore, by careful experimental investigation a psychological basis were found for the policy of postponement which is at present dictated by the need to bridge the gulf between primary and secondary schools, it might well be that it would give food for thought even to the most rabid advocate of the classics or modern languages as nourishment for babes. In many ways practice is ahead of theory, but in many others practice lags lamentably behind the most firmly based principles. Even without any further experiment, one principle has already received ample proof, namely, that no foreign language should be taught a child before facility in the mother tongue has been acquired—in reading, speech, and writing. Against this scarcely a voice is raised in protest.

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When we suggest that there can be no real facility of appreciation or expression without the power to deal with abstract terms, a few dissentient voices are raised. And when we venture the further suggestion that very few children under 12 years of age possess this power to any degree, the application of the statement to the teaching of dead and modern languages becomes so evident that it is no longer acceptable. Those who support the view that foreign languages should be taught much earlier are obliged either to disprove this suggestion (a matter of great difficulty) or to fall back on argument from the exceptional cases of early development. To be quite fair to these language enthusiasts, it must be admitted that the child's memory is good some years before he acquires the power to deal with abstract terms of any complexity. Experiment goes to prove, however, that it is even better at 12 than at an earlier age; and we would urge that school life up to 12 years of age should on psychological grounds be spent in acquiring a good English vocabulary and idiom, and a wide acquaintance with English literary masterpieces. It must none the less be admitted that psychological investigations have not yet been able to do more than fix the approximate age when for normal children the study of a new language may be begun. In plain language, the word 'facility' used in this paragraph is a relative term, and needs much closer definition. What is the degree of facility in the use of the mother tongue which will not only persist unharmed in spite of the

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encroachments of another tongue, but will also be of highest use in its acquirement ?

As some proof of the harm that may be done by the too early introduction of a foreign language, we may note the almost general inability to speak or write one language well of those who, through spending their childhood in a foreign land, become bilinguals. M. Rochefort, the late gentle editor of the *Intransigeant*, when in exile in England, refused to learn English for fear it should diminish his power over epithet and invective. As some positive evidence of the value of a firmly fixed and facile mother tongue, it has been asserted by experts that those schools which begin the classics or modern language work latest are producing the best results. There are, therefore, ample grounds for further research in this direction. We need very extended and careful experiment, not only by scattered and earnest teachers working under local conditions, but regulated and supervised from a central point by eminent psychological teachers or pedagogic psychologists.

If the result of such research should be to defer the teaching of a foreign language until about the age of 12, one of the chief difficulties which exist in the passage of the elementary school child to the universities would be removed. There are, of course, other difficulties of curricula, which we believe are not insurmountable. There is one, however, that only the grace of God and a developed common sense can remove, and that is, the prejudice against the primary

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school child as such. The head master of one of our greatest London public schools has expressed himself as quite inimical to the introduction of primary school children into his school, and has asserted that they seldom make anything of their secondary school training. Too often they are treated almost as pariahs, and some schools are even prepared to sacrifice generous grants in order to exclude them. If the various educational authorities could be induced to modify the present scholarship systems, there would be less excuse for this attitude. The broad views and lofty ideals which legend lays to the credit of a classical education would be more apparent if a less unsympathetic attitude in this matter were adopted by certain secondary schools. It is quite certain that we are still distant from that point where (paraphrasing the words of the Code) we discover individual children who show promise of exceptional capacity and develop their special gifts (so far as this can be done without sacrificing the interests of the majority of the children), 'so that they may be qualified to pass at the proper age into secondary schools, and be able to derive the maximum of benefit from the education there offered them.' [1]

NOTE.—It should be noted that the Scotch system of education follows most closely the principles laid down in this chapter. Stated broadly, the primary school (with infant, junior, and senior divisions) is in organic relation with (1) a system of supplementary courses for

[1] *Code of Regulations for Public Elementary Schools in England*, 1909, Introduction.

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children who have been 'certified by the teacher of the class and by the head master of the (primary) school to be of good proficiency'. At the end of the course, which must last at least one complete school-year, a certificate of merit is granted to those who have reached the age of 14 and have made good use of their opportunities. (2) A system of higher grade schools with a minimum course of three years for pupils between the ages of 12 and 15 or 16, and (3) a secondary school system with a minimum course of five years for pupils between the ages of 12 and 17 or 18. Still more important is the attitude of the Scotch Education Department towards this organization, shown by the following statement: 'On the other hand it is important that as between the secondary school and the various intermediate schools of the same district there should be no unnecessary divergence of curriculum in the earlier stages, so that transference from the one to the other may not be impeded.' (*Code of Regulations for Day Schools in Scotland*, p. x.)

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CHAPTER XI

FUNDAMENTALS OF MATTER—ENGLISH

In the course of our discussions it has become clear that the school curriculum must be of sufficient width and variety to give full weight to the many specific aspects of life. And in this demand is to be found the ground of the teacher's complaint, namely, that he is asked to offer for digestion in soluble form the whole universe; that the child, hungry or satiated, must continue to eat—everything. No work, therefore, upon educational values would meet with the serious consideration of teachers unless it treated the problem in a practical as well as a theoretical manner. There must appear a clear differentiation between the intrinsic values of various kinds of knowledge and capacity, so that the limits set by the time at the teachers' disposal may be given proper consideration. Fundamentals must be discovered and assigned their proper position, while non-fundamentals must also be put in their proper place, which in many cases lies outside the curriculum. And we have already seen that this is not a problem which can be solved once for all; it is perennial, since a growing society will be constantly changing its estimate of values.

The word 'fundamental' has been used to cover many irreconcilable ideas. We have, it is hoped, rid

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ourselves of one wrong view of its meaning; the view, namely, that a subject becomes fundamental because it provides what is regarded as a highly valuable form of mental gymnastic.

A recent writer [1] has used the word in another sense, as applicable to those subjects which come first in the order of development of the child's mind. This appears to be a legitimate use of the word, although it is not the sense in which the word is understood in any discussion of the present problem. Mr. Ballard, in assigning relative importance to the school subjects from this point of view, places arithmetic, reading, writing, and spelling last; physical training and nature-study in its widest sense, first. A classification of this sort becomes a valuable guide to method and will even serve as a standard in the planning of curricula until the point in life is reached where systematic schooling and work are seriously begun. After that point we still have to solve the problem as to relative educational values. Beyond the age of six or seven, therefore, such a division of the subject-matter of the school affords no explanation of 'fundamental' in our sense. Nor is it of course intended to do so. As the term is used in this chapter, 'fundamental' is applied less to the order in which the material shall be taught than to the body of knowledge and capacities which the primary school child may be presumed capable of acquiring—knowledge and capacities that he will need in the ordinary exigencies of life; for work or leisure; for the mental

[1] Ballard, *Handwork as an Educational Medium*, p. 127.

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and for the active life; for individual, family, social and national life.

It needed only a few barren years of 'science' teaching to convince the observant person that the emphasis Spencer asks us to put upon 'science' is unjustifiable. The man who knows where his Eustachian tubes are is neither better equipped for life nor more useful and happy for the knowledge. Spencer is not the only authority who puts stress on this side of knowledge. In a paper recently contributed to the Halifax Child-Study Conference, Sir Thomas Clouston asserts 'that a general knowledge of physiology and a particular knowledge of the brain-cell must be necessary in the case of the teacher if he or she is to do their work efficiently.[1] And we are constantly meeting the person who insists on exhausting the universe in order to throw light upon some fact the importance of which consists not in a complete comprehension, but almost entirely in the applications which can be made of it. To the teacher, some understanding of his pupils' mental processes is worth more than a thorough acquaintance with the brain-cell, and to the ordinary child hygiene is immeasurably more valuable than chemistry or physiology. It is safe to assert that in the sense in which Spencer understood the term, 'science' is not the fundamental primary school subject.

Some specialists or enthusiasts regard 'handicraft' as the fundamental school subject. Here we come across an ambiguous use of the word 'subject'. Neither

[1] *Child Study*, April 1912.

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'number' in the lower grades of the infant school, nor 'spelling' in the upper school can be properly called a 'subject'; they might perhaps be called 'instrumental subjects'. So far as the child's play and occupations call for expression by means of number, he will learn number; there will be no formal number lessons. A great part of handicraft work is of the same kind. In the Manual Training Centre, in paper folding or cardboard modelling, or in a technical drawing lesson, handicraft may quite properly be called a 'subject'; but in other domains, such as arithmetic, history, or science, it is 'instrumental', serving as a means of attaining clearness in those subjects. It is here a *method*. The practical importance—indeed the educational necessity—of all kinds of manual work is becoming generally recognized. There would be no hesitation, however, if we had to choose between the rival claims as distinct 'subjects' of manual training on the one hand and history, geography, or literature on the other, in deciding that the first represents a comparatively narrow side of life. We shall find ourselves in perfect agreement with the enthusiasts for this study if they will be content to urge its claims to a fundamental position on the score of its value as a method.

Miss Charlotte Mason[1] takes literature to be the fundamental. In her recent inspiring letters to *The Times* she urges the need of more *abstract* knowledge,

[1] 'The Basis of National Strength,' *The Times Educational Supplement*, February, March, April, May, and June, 1912.

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knowledge obtained through reading. The crying need of the nation is abstract knowledge. The mind, she says, is being shamefully underfed. The dictum, so well known to teachers, of 'Things, not words,' is intrinsically demoralizing. Literature alone can satisfy mind-hunger. The dramatic method of teaching history is a 'huge waste of time when serious work is required'. The Morris dances, pageants, living pictures, and miracle plays which, under the aegis of the philosophical assertion that all knowledge is derived through the senses, have found their way into the schools, are not regarded by Miss Mason as of that degree of value which the modern teacher is inclined to assign to them. 'In the sort of self-activity and self-expression implied in these and in half a dozen other educational theories, knowledge plays no part.'

This is not the place to discuss the subsidiary points of Miss Mason's views of curricula. The whole series of articles is inspiringly written and contains much that appeals to every sincere educationist. There is indeed a great deal to be said for the view that literature is the fundamental subject. No other subject touches life at so many points; no other is so deeply impregnated with emotion—the basis of real usable ideals; and no other is capable of such wide application to life. Theoretically it is difficult to understand how a lover of good literature can be a bad man; actually he sometimes is; and our researches into formal training have shown us that similar failures to apply

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knowledge are common. None the less, this subject, supplemented by ancillary branches, appears to offer the best means of developing many-sided interest and of enabling the pupil to play a not ignoble rôle in life. To Miss Mason, literature means the classics; to the primary school, it means English literature.

Are we, however, attacking the question in a reasonable manner, or, indeed, are we perhaps posing a quite academic question? There is another way of approaching the question of 'fundamentals'. Instead of dividing human knowledge into distinct branches and contending as to which is the most important, we might find it more practical to select from the whole *undivided* body of knowledge those parts which are typical of our present civilization, to colligate the facts, principles[1] and activities most serviceable in normal life. Although it is probable that every writer and thinker on the subject, in estimating the relative values of the individual facts belonging to his particular branch, has more or less definitely before his mind the values of the individual facts which form the material of other branches, yet we may perhaps venture to assert that in almost every instance where too much space in the curriculum has been accorded to one 'subject' at the expense of others, the error has been due to some educational expert or enthusiast who has, in his occupation with the one 'subject', forgotten to take into

[1] 'Principles' here refers to specific scientific and mathematical principles and not to principles of conduct, which must be intentionally aimed at in every school subject and school activity.

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account the value of matter belonging to other 'subjects'. The mathematical enthusiast, for example, has put an unfair stress upon arithmetic because he omitted to consider the importance of certain historical or geographical knowledge. The alternative method suggested of reaching 'fundamentals' is, in its simple form, too difficult to put into operation. We can scarcely imagine even a Royal Commission busily engaged in making a promiscuous list of typical facts, principles, and activities most serviceable in normal life. It is evident that we must in practice deal with the separate branches first, and select tentatively, from each, material for the curriculum. But when this has been done, is it then not possible to reconsider the whole curriculum, with all its branches of study, in order to obtain a truer because comparative evaluation of the entire matter of instruction? We shall never get more than an approximation; but this is equally true when dealing with any form of human activity—economics and history as well as pedagogics. If the one standard we have indicated could be kept quite clearly before the mind, and if the doctrine of specific values and of concepts of method were so definitely and firmly held that errors in that direction could be brought home at once, there should be no insuperable difficulty in framing a scheme of studies in principle approximately correct. It is possible for a company of able men, by using the standard of 'life values', to discuss this question and to arrive at some just balance. It is possible, but we are as yet far from the goal. Up to the

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present the method suggested has been adopted in a loose way and only with regard to the individual subjects. One of the most valuable pieces of recent work of this kind has been undertaken by the London County Council. Committees consisting of experts have been formed to ascertain the essentials in content and treatment of the various primary school subjects. Each subject was considered separately and in isolation from all the others. Nothing of this kind hitherto done can compare in value with some of the reports which these committees have drawn up. There is a strong tendency, however, natural to branch experts, to exaggerate the claims of certain elements belonging to their particular subjects. In some reports, particularly in that on the teaching of mathematics, the material is made to appear so broad and deep as to be sufficient in itself to fill the curriculum. The sense of proportion is lost, and we get once more formal training in another form. What is apparently needed is that these valuable reports should now form the basis for the work of a joint conference, which would adjust the balance and which would not only select material valuable in life, but widen or limit that material according to the time and capacity available for it. The world would then witness an unparalleled and sublime spectacle—educational experts for the first time discovering the other subjects of the curriculum and consenting to the death of many of their own bantlings with : ' I quite see that this element must go, that these items are of less value than those '—Israelitish women contributing the adorn-

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ments of their own persons for the salvation of the State.

No single mind can hope to do any justice to the important work here suggested. The general lines will have to be laid down by experts—theorists and practical men and women—and the detailed working out of the schemes committed to the teachers, whose experience of the schemes will lead to further experiment and inferences which will influence all future attempts at the construction of curricula. In the meantime the theorists may inductively or deductively discover fresh truth, which in its turn will modify or perhaps change the form of investigation and experiment. Only by combined labour and thought can this task be undertaken and carried on in its endless rhythm.

Certainly the present writer is not prepared to take up and wear the mantle of Rousseau and begin educational theory and practice all over again. Both are growths, not creations. No man can do for education what Sieyès thought he could for the French Constitution. General educational experience and thought have in the course of ages gradually developed the curricula of the present day; and it is hardly consonant with sanity, and certainly not with a proper sense of one's own significance, to deal in an off-hand or sweeping manner with the accumulated experience of the race. Mr. Gorst's account of *The Educational Failure* strikes one at first with surprise at his temerity, and finally at his presumption. In our discussion of curricula we seek neither to avoid the former nor to

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emulate the latter characteristic. The main task of the future must be the examination of traditional curricula, with a view to ascertaining, in the light of our leading principles, what parts do not appear to have any sound reason for their presence; which are over- or under-stressed. At the same time, those principles may suggest that omissions exist.

In reality it is no part of the work of the theorist to apply his theories to practice, nor ought these to meet with any less consideration because he refuses to descend into the arena and work them out—probably badly—himself. Indeed, it has been said that the highest type of theory, that which should bring most joy to the propounder, is that which can never be of use to anybody. Educational theory, at any rate, cannot be of this sort. In spite of the freedom from the necessity of application which the theorist enjoys, there are many reasons why in the present instance an attempt should be made to apply the principles enunciated to at least a single school subject, the chief being that the operation may help to clear up theoretical points which are obscure owing to lack of understanding on the part of the reader or of clear statement on the part of the writer. No single man would attempt to lay a modern high road through a deep forest, although many a one has blazed a trail. And this is all that can be attempted here. We shall consequently refrain from any attempt to deal with the various sides of human knowledge and activity in the way previously suggested beyond roughly outlining, in the case of

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English, the scope and limits which the principle of specific values appears to direct. If the reader has understood and given his assent to the principles laid down, he will be in a position to exercise his own judgement with reference to other subjects with a singleness of mind which the various and at times contradictory theories concerning curricula have hitherto made impossible.

It should be clearly understood that the following suggestions with reference to the English syllabus are more critical than constructive. If it were otherwise, the writer would be attempting something which he has already asserted to be impossible. Moreover, they embody an effort to draw up an English syllabus while keeping before the mind the intrinsic values of the material of other branches of the curriculum. If the reader has agreed so far as to share the opinions expressed as to the values to be attached to physical education, hygiene, and handwork, to aesthetic appreciation as well as to knowledge of facts, there will be less likelihood of disagreement with regard to the syllabus of work in English.

No syllabus or scheme of work can of course give a true picture of the school work. To estimate its real value we must see it in living form—that is, in the process of presentation by the teacher; we must know the degree of detail, the size of the 'objective',[1] the amount of abstraction and the kind of induction, the degree of understanding and assimilation demanded.

[1] Professor Adams, *Exposition and Illustration*, chap. vi, p. 156.

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When the most perfect curriculum is framed we shall still need, and probably to a greater extent than before, the skilled teacher possessed of common sense and humanity.

Let us, then, examine by the light of our principles the English syllabus. It will be conceded that, by introducing material and work of any kind before the child unconsciously indicates his readiness for it, before the need has been created, we are doing nothing less than trusting to formal discipline. The subject-matter, having no present value to the child, is at the moment of purely disciplinary value. It is true that such knowledge may become later of the greatest value. There might seem no great harm in thus forestalling nature, until we remember that these formal activities must necessarily exclude some that are constituents of the child's actual life. Nature exacts too, for such errors, her penalties in ill health, in mental retardation at a later period, and in other troubles which as yet neither pathological nor pedagogical research has been able more than partially to trace. The children of our primary and preparatory schools, massed as they are into classes, should therefore not begin to learn systematically to read until they are about six years of age.[1] We cannot lay down any rules for individuals, but for collective teaching we can and must. There is an almost immortal prejudice among us that the power to read ought to be developed as early as possible, and that

[1] In Germany and elsewhere there is a movement to postpone it till the age of seven.

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until that power is acquired we cannot begin to speak of education. A most natural feeling, but, like so many mere feelings, misdirected. We love to produce homuncules. There is ample work for the child to do before he begins to look at the world through the medium of print. Life for him teems with the practical. Speech must come first; some facility in using the natural means of expression must precede the art of reading.

The instruction in phonetics often given in the first reading lessons seems to have little real connexion with living speech, and to assume a degree of mental development not yet reached. When it is remembered that the psychological unit of speech is the sentence, and further that many children when beginning to learn to read have not yet analysed their own sentences even into words, some idea may be formed of the difficulty of a further analysis of words into sounds. It appears to the present writer that to train children to build up the sound of a word, making them add letter-sound to letter-sound in the order in which the letters themselves appear, is not, at any rate theoretically, the ideal way of training them to *recognize* words by their *general* appearance. It is the latter process which constitutes reading. This method of teaching looks very much like a kind of formal training; that is, a training in one process in order to give the ability to perform another and different one. We would suggest that, since reading is essentially the *recognition* of words, it would be more correct to give from the very beginning exercises in recognizing. Before dealing with elementary

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sounds, it seems more reasonable that the children should be able to recognize a fairly large number of printed or written words through repeatedly seeing them in sentences and hearing them read. However, this is a point about which we do not wish to dogmatize. It is certain that, sooner or later in learning to read, our pupils should have acquired some analytical power, and consequently the knowledge of elementary sounds and their printed symbols; and it is also certain that such knowledge will be then used in deciphering *new* words. The whole question seems to be as to the precise moment when this analytical work should begin. Should the teacher deal with the elements straight away, or should he wait until his pupils clearly indicate that the process has started in their own minds? So far as the principle of direct training applies here, it would be reasonable to infer that the latter is the more sensible plan.[1]

If the reader is now of opinion that we are dealing with methods of teaching rather than with the curriculum, we should be inclined to agree; but would plead as excuse that the preceding remarks on method might suggest that even the earliest reading lesson should start with real *sentences*; this view of the question brings us perhaps somewhat nearer to the subject under discussion—the curriculum.

It is very important that all reading matter should have a literary value. The children cannot be led to

[1] See B. Dumville, *Science of Speech* (chapter on learning to read).

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appreciate the best by formal means; for example, by memorizing good poems and reading bad ones. Not long ago, the only literary matter read was to be found in the so-called recitation lessons; the bulk of the reading matter was of little worth. Things are not so bad to-day; but this kind of reading book has not yet been entirely superseded. Our school-books are still only partially literary. There are still the semi-moral, the quasi-patriotic, the highly diluted, the brutally informative, and a score of other types. Many books are apparently still written with the double intention of providing matter graded with reference to linguistic difficulties and at the same time containing instruction in some definite branch of knowledge—historical, geographical or scientific. The following extract from a geographical Reader illustrates how such double intentions work out in practice. In a chapter entitled 'A Plan', it begins thus: 'One day the teacher showed the children a large drawing and said, "Tom, can you tell me what this is?" "It is a plan, sir," was the boy's reply. "Of what is it a plan?"'.... And again: 'While the teacher was drawing the plan he said, "The size of the plan depends upon the scale on which we draw it. It may be large or small. You must never forget that."' Shall we ever induce an intelligent interest in the world when our scholars are nourished on non-literary matter of this sort, or even upon this somewhat better sort: 'Between Basle and Mayence stands Strasburg, a strong fortress which commands the pass across the Vosges mountains into

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France. Until 1871 it belonged to the French, but in that year it was captured by the German army. It has a magnificent cathedral in which there is a famous clock. The quarters are struck by an angel, and the hours by a skeleton, whilst at noon the twelve apostles move round a figure of the Saviour. The day of the week, the day of the month, the year, and the motion of the moon and planets are all shown, and are kept correct by the mechanism itself. A curious industry carried on at Strasburg is the fattening of geese in order to enlarge their livers, which are considered a great delicacy.'

Such History and Geography Readers have the qualities neither of a good text-book nor of illustrative selections. We would suggest with regard to the one instance that instruction with regard to the nature of a plan is not suited to a reading book, and with regard to the other, that there exist a large number of literary references to Strasburg which might very well be substituted for the purely instructive matter quoted.

Then there are to be found reading books which, by reason of their linguistic difficulties, should never be placed in the hands of children whose speech is infirm and lame, whose pronunciation is impure; reading books, for example, containing a mixture of modern and Chaucerian English, or Tennyson's dialect poems.

The principle we have to keep in view in selecting reading books is clear. To have any hope of developing literary judgement or even enjoyment, *all* the books must not only be of the highest type in matter and

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style, but must be so far comprehensible as to excite and maintain interest; the language of the reading books must not be almost totally alien to the child's own speech, but must be such as to make it as easy as possible to apply both language and matter to the everyday life. Our cultivation of taste must be upon specific, not formal lines. Any attempt to cultivate literary taste by means of occasional lessons or by rare intercourse with literature, combined with the reading of a considerable amount of indifferent or hardly comprehensible matter, is nothing less than an application of the discarded notion of mental gymnastic or formal training in another guise, and is therefore foredoomed to failure.

A committee of teachers and educationists might perform a useful task in cleansing the Augean stables. There are books littering the schools which through the poverty of some educational authorities cannot be sent back until they are decrepit. In many cases there should be no need to wait until that stage; they should be burnt in the interests of hygiene and literature.[1]

The reading book is sometimes outrageously illustrated. Rare visits to art galleries, combined with the daily impressions derived from reading-book illustrations of a certain kind, will secure the same kind of effect upon the mind that a single bath per year would have upon the body. If pictorial illustration

[1] The reader is referred to Miss C. Linklater Thomson's two fascinating lectures on *The Teaching of English* (Horace Marshall & Son) for a very happy treatment of the subject.

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is necessary, then it should be the best possible. Taste will remain a stranger to our pupils unless its embodiments are constantly before them. Far better to have books and walls devoid of pictures than actually to train a debased taste.

What can be said of spelling? Is it, or is it not, to occupy a definite place in the curriculum? There is no doubt that it is a necessary acquirement. In life it is within certain limits necessary that every person should for the sake of the reader be able in writing not only to make himself clear, but easily clear. No bar to rapid and agreeable intercommunication should be permitted. A normal child who reads a normal quantity of matter will generally by the age of fourteen acquire a very fair knowledge of orthography, without any special lessons; the less capable child will not. It is therefore not entirely a prejudice or a convention which leads us to use spelling as one test of the possession of ordinary capacities. There are, however, two things to note. First, that there are notable exceptions to this rule. Children of good power in other directions occasionally spell badly; so that the test is not always valid. Secondly, that when the teacher deals with spelling *only* as a distinct subject and compels practice at lists of disconnected words, drawn together not because they have been recently used in class but because they follow one rule or simply occur to the teacher's mind, he is emphasizing the difference between the power to read and the power to spell and doing a great deal to

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augment the number of those pupils in whom the difference between the two powers is most marked. If the separate spelling lesson is considered desirable, it cannot at any rate obviate the necessity of frequently drawing attention to the orthography of words in their living context, to the forms of words as they appear in reading, transcription, dictation, and composition exercises; in geography, history, and arithmetic lessons. Dictation should be used for this purpose much more frequently than for merely testing the pupil's knowledge. Dissociated entirely from the context, spelling becomes formal, and the word learned in a list will still be incorrectly spelled when put into a composition exercise. Moreover, rules of orthography are of little use unless they are arrived at as the result of observation. Lists of words will therefore gradually be accumulated by the children and can be made use of in order to derive rules. Otherwise the exercise is divorced from its concrete setting in sentences and in the natural flow of school experience. To sum up, we may say that our idea of the importance of *direct* training leads us to attach a very high value to what is often rather disrespectfully named 'incidental' work.

Similarly with derivation. As soon as this subject is cut off from the rest of school life and experience by being treated in entire isolation, we are tacitly assuming that the pupil will be able to apply the ideas there gained to his general reading. This is to assume the possibility of formal training. Only when in addition

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the teacher very frequently brings derivation to help in all lessons can he be regarded as giving the necessary training. In the primary school, practically the whole of this work should be of an ' incidental ' kind.

In composition, formal training still lingers in our schools wherever the exercise is confined to the set lesson; it is a true discipline when every school subject is made the training ground for it. This axiom is often admitted, but not fairly employed. We are untrue to it, for instance, when our application consists only in taking parts of the school subjects as matter for composition lessons. It is truly applied only when the children are called upon in every lesson to express themselves either in speech or in writing. And this is for the purpose of obtaining not merely constant, but more particularly *wide* practice; for freedom of expression is with most of us only a very specific power, functioning, for example, when writing but not when speaking; or perhaps when treating of geographical but not of historical facts, of literary but not of scientific material.

Further, there must be specific training in both oral and written work. It is sometimes thought that if the child has learned how to express himself by word of mouth upon some topic, he is thereby able to do it equally well with pen and ink; and in the same way, although the direct question as to whether the power to write involves the power to speak the same matter would be met with a decided negative, yet in practice

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the contrary answer is frequently implicit. Do we give our pupils all the available opportunities of expressing themselves orally? Do we not often act as if speech were the first step, and had no other function than to ease the path towards written work? Doubtless oral practice does do this, but its function is much nobler. By listening for a few moments to the natural speech of a gifted and cultured person we get some notion of what that function is. It should become a common practice in nearly all lessons to spend the first five minutes in obtaining from the pupils a summary of the previous work done; in the lower classes chiefly by question and answer, in the upper classes in the form of continuous speech. The two specific forms of oral and written expression are ultimately distinct from one another. Practice in *both* must be continued side by side during the whole of school life. The one should never be regarded as a substitute for the other. For the primary school child, training in oral expression is peculiarly necessary for many reasons, among them being the fact that for many of our pupils oral expression is practically the only form employed after leaving school.

The doctrine of specific disciplines will again find concrete application in the use as subject-matter of composition exercises of all the typical experiences of the child, so that he receives actual practice in those very topics of which he will talk to his companions and at home. As soon as he is asked to speak or write on exceptional, recondite topics, it is being assumed that

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he is able to transfer to these the power acquired in those other and more interesting matters of which he actually talks. When such abstract or unusual subjects are frequently set, it results in the setting up of a distinction in his mind between the formal speech necessary to the one kind and the more homely wording natural to the other. This distinction, although not consciously made, is the greatest enemy to a pure use of the mother tongue.

The reading of good literature may do something to improve both speech and writing, but how marvellously little it is discouraging to admit. Few children under fourteen get any notion of style from their reading; the real value of the latter consists far less in its effect upon the child's own power of expression than in the unreflective *appreciation* of beauty of thought and expression. There is no reason to undervalue this influence; but it seems necessary to keep clearly before us the possibility that we may have the one without the other; a halting, or florid, or sentimental, or blatant style may very well, and frequently does, accompany an acquaintance with and even an enjoyment of our English masterpieces. Even the vocabulary of most of us lingers far behind our comprehension of words. The very terms we have learned to use in their prose or poetic settings are often no part of our current language; so strong is the force of specific training.

The speech of the teacher should, however, be a most powerful auxiliary. Not only is this a comparatively constant factor in the child's environment, but it is

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present in every type of experience presented in school life; that is to say, it gives specific speech-training in every subject handled in school. When, however, the very real difference between school and the world outside the school is over-accentuated, the teacher's influence is much reduced. The pupils are unable, as we have repeatedly seen, to carry over the method concepts and ideals of school life into the other sphere. To cling to the belief that this 'transfer' is possible to any degree is to express a touching confidence in the theory of general mental discipline and to run counter to the commonest experience. What, then, can be expected or hoped for, if the teacher's own language has serious defects? There is left the rather cold comfort which our view of training affords, that a teacher's influence is after all but small; that the specific training is confined to the class-room; and that the child on leaving the school premises, like the duck emerging from the stagnant pool, is able to shake himself easily free. The Training Colleges are in this matter doing their utmost to counteract the effects of careless training and injudicious selection of students; the principles we have enunciated and actual facts demonstrate how little they can do.

The principle we have sought to make clear affords valuable guidance when we come to examine the claims of grammar to a position in the curriculum. It will be worth while, therefore, to consider for a moment the findings of the Conference on the 'Teaching of English

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in London Elementary Schools'[1] with reference to grammar. The opinions of such a representative Conference are entitled to carry great weight, especially as they are typical of the more moderate attitude with regard to grammar teaching. Our principle leads us necessarily to a conclusion which is to some extent at variance with that of the Report, and which is more nearly expressed in the following terms: 'Practice, careful correction, and much imitation of good models are of themselves sufficient to ensure accuracy of expression, precision of structure, and even elegance of style.' Even this statement, quoted in the Report not as the expression of its own view but as that of 'not a few teachers', requires, from our point of view, some modifications. The terms 'accuracy', 'precision', and 'elegance' used with reference to the English of the average child are misleading. They are ideals the attainment of which is beyond our highest hopes. Now the Report appears to assume that, by means of teaching grammar, approximation to these ideals may be closer than by the empirical means indicated. It is to this view that the principle of specific training is opposed. But the opposition is not so strong that compromise is excluded. Just because it *is* possible to form concepts and apply them to many different situations, thus avoiding the necessity of specific instruction in every branch and sub-branch of knowledge, it is useful to teach children the leading principles of speech and

[1] *Report of a Conference on the Teaching of English in London Elementary Schools*, London County Council.

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composition. This every intelligent teacher of English will grant. In the past these 'leading principles' developed into a tangle known as 'Grammar'; and in the view of the writer, the Conference, although not falling into that error, has still been too ambitious. When the range of primary school grammar teaching is made to include 'the phenomena of growth, change and decay which make up the life history of a language, or the characteristics which distinguish one writer or one period from another',[1] we begin to wonder whether it would not be advantageous in these Conferences to have a typical child constantly present to remind the honourable members of the virtue of moderation. The truth is that in private and familiar talk we under-estimate, and in official palavers we over-estimate the powers of the child. Most of us are ready to complain of the poor mental quality of our pupils, and are equally ready to give them mental indigestion. The greater part of what the schools know as grammar is beyond the comprehension of the child as well as of the adult. The Conference itself is not at all clear as to what constitutes the subject of a sentence. 'The subject', it says, 'comes into consciousness first.'[2] But does it? 'By the waters of Babylon we sat down and wept.' 'The boy, alas! we saw drowned.' The inversion often marks the very fact that some idea other than the subject comes first into consciousness. But even if the rules of grammar could be inductively reached by the pupil, correct speech and writing are matters of

[1] Ibid., p. 42. [2] Ibid., p. 43.

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acquaintance and habit, of familiarity and not of understanding. I use correctly and easily such expressions as 'Am I not' or 'I was'; but I have not learned to do this by any grammatical explanation of their use. Grammar is one thing, composition is another; and only a gifted or a mature mind can bridge the gulf which divides them. The old notion that practice in threading labyrinths of analysis and parsing is the direct means of attaining 'accuracy', 'precision', and 'even elegance' of speech or writing, is nothing less than our old enemy—the theory of formal training, the theory that has led so many into the desert. The myth of formal discipline still exercises a potent influence; for the Conference sees in grammar a means of 'training in the processes of reflection'[1] and 'an introduction to the principles of abstract reasoning'.[2] We must hope that the so-called introduction to abstract reasoning may take an easier form; for this is very much like learning to swim in one's first shipwreck. There is, moreover, very little abstract reasoning done. At the best certain children become expert in a hole and corner kind of occupation that has little connexion with abstract thought or the practical necessities of life; at the worst they become more or less expert in adjusting their answers to the form desired and broadly hinted at by the teacher. For example: 'The cat is running.'

Teacher. What am I thinking about?

Child. About the cat running.

[1] *Report*, p. 42. [2] Ibid.

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Teacher. Oh no! What *thing* am I thinking about?

Child. The cat.

Teacher. Yes! Now what is the subject of the sentence?

Child. The cat.

Teacher. Oh no!

Child (anxious to please). Running, &c.

Teacher. Oh no! . . . What is a sentence made up of?

Child. Words.

Teacher. Yes! Well, we are dealing with words, not things. (The teacher forgets that a moment ago he was dealing with the object of thought and not with words.) What, therefore, is the subject?

Child. The word 'cat'.

It is surprising with what accuracy children can learn to use a terminology which has never had any real meaning for them. It is recommended in the Report that grammar should be begun at ten years of age. Let us take one example of what must be taught in the earliest lessons. Having shown how the children discover the subject of the sentence, the Report proceeds thus: 'The second step follows naturally, and enquires what statement has been made concerning that which has occupied the mind.'[1] It would be no agreeable task to translate this terminology into the language of a child of ten.

With regard to parsing, our principle would rule out the grammatical treatment of gender as useless and would direct a quite empirical treatment of case, of the

[1] Ibid., p. 44.

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relative pronoun, and of the auxiliary and infinitive forms. 'The distinction between "can" and "may" and the varying significance of "shall" and "will"; the use of the imperfect or present participle in denoting a second action contemporaneous with that denoted by the finite verb'[1] are not grammatical but linguistic points. Grammatical treatment of 'such shades of meaning as are indicated by "I walk"; "I am walking"; "I have walked"; "I have been walking",[2] is quite unnecessary.' The experience of the result of an attempt to teach that 'I have walked' expresses the present tense confirms the theory that such abstract thinking is beyond most children of even 13 or 14 years of age.

The Report, so far as the teaching of grammar is concerned, seems to be somewhat influenced by the desire to combat the critics who assert that 'English has no grammar'. It admits, in order to prove that English possesses grammar, that the 'locutions which have made themselves the substitutes for inflections . . . are of a particularly subtle and evasive kind'.[3] In this fact we find ample justification for a less ambitious programme in this subject. In this fact, too, we see the impossibility of ever reaching through grammar the stage of 'unconscious correctness'. The pupils of our primary schools, and indeed most children of primary school age are incapable of the mental transference involved in passing from grammar to language. Every one knows how difficult and often impossible it is to

[1] *Report*, p. 45. [2] Ibid. [3] Ibid., p. 46.

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eradicate in oneself an error of speech which has survived the 'slangy' age, even when we are fully conscious of the defect and determined to remove it. We are building upon sand if we attempt to teach language through grammar. What can be said of those schools which continue to include this subject in the syllabus for children of seven?

Since it is no part of the present writer's intention to do more than indicate the application of the principle of direct training, it may perhaps suffice to select one or two examples of the type of language work which should take the place of the formal grammar teaching which the above principle seemed, so far as the primary school child is concerned, to condemn.

1. *Subject and predicate.*

(*a*) Some skill should be obtained by pupils in performing this simplest process of analysis.

(*b*) *Subject, with adjuncts.*

(i) Show from sentences how the meaning of the subject is narrowed by the use of adjuncts.

(ii) Obtain and show adjuncts of different types—words, phrases, and clauses. Give practice in selecting correct adjuncts—use this knowledge constantly in reading lessons.

(iii) Show the advisability of putting the adjunct as near the subject word as possible—indicate the function of punctuation in this direction.

(iv) Increase the stock of adjectival words and phrases.

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2. *The predicate.*

(i) Again show the narrowing of meaning by the use of words, phrases, and clauses.

(ii) Discuss from numerous examples the natural order of such adjuncts.

(iii) Increase the stock of adverbial words and phrases.

(iv) Apply this knowledge in punctuation and composition, e.g. Eating hungrily, I sat down by a boy. I sat down by a boy eating hungrily, &c.

3. *The question as a sentence.* The teaching is to be directed to the correction of the following common errors :

(i) *Who* do you mean ?

(ii) The wrong form of answer to such questions as '*How* did. . . .'

Answer often given by children. . . . '*Because*. . . .'

(iii) The confusion between 'which man ?' and 'what man ?'

Note. (*a*) The use of the note of interrogation—for intonation, not for punctuation.

(*b*) Contrast direct and indirect questions and deal with their different punctuation.

4. *Joining words.*

(i) *Conjunctions* (which merely join).

Deal with such speech difficulties as

(*a*) The difference in meaning between *and* and *but.*

(*b*) The construction with 'neither . . . nor'.

(*c*) Elliptical sentences, such as : He likes his brother better than *me.*

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(ii) *Relative words.*

(*a*) Demonstrate the function of this type of word, leading pupils to make their inferences from such sentences as: I saw a man *and* he was . . . or *and* he said . . .

(*b*) Distinguish between defining and non-defining clauses with their punctuation.

(*c*) Distinguish between the uses of that, which, and who.

(iii) *Prepositions.* Deal with such linguistic errors as:

(*a*) between you and *I*.

(*b*) the man *who* I spoke about.

(*c*) *Who* are you speaking to?

These examples of language work are perhaps sufficient to illustrate the point we desire to emphasize, namely, that the matter of the grammar lesson should be the pupil's *language*. For the most part we must be content to tell him the proper form, and give him opportunity in every lesson of practising it.

The principle of specific training has something to say also with regard to the literary matter of the curriculum. The guidance it gives does not in any way curtail the teacher's freedom, which consists after all in obeying the laws which govern the processes of assimilation. We have previously noted the double function of literature as an avenue through which we come more closely into touch with life, and also as a means by which we escape from our own

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workaday world. The two functions are, of course, in no way incompatible. Frequently it is true that the latter function is performed more thoroughly when material and style are not those of the present day. Chaucer can transport us from a modern world of hustle to one of comparative restfulness. He reveals to us mediaeval England, its less complicated conditions, its men and women in their lighter moods. But both functions are conditioned. The manner of telling the story must be familiar. Recondite language can have little or no place in the curriculum of children under fourteen. Chaucerian and Middle English stories must for pupils of this age be translated into modern and literary English, and only sparsely illustrated with selections or quotations.

We must not lose sight of the fact that a large number of our older pupils are reading outside school hours books of all kinds of comparatively *recent* manufacture, and that when they leave the primary school this practice will continue. Many, it is true, have no desire for reading. We must further recognize that the former are reading good, bad, and indifferent *modern* writers, and that if we succeed in inculcating a desire to read, it is again modern literature which will form the staple food. If this be granted, as I think it must, then the greater part of the literary matter dealt with in school must consist of the work of those writers whose language is modern and whose ways of thought are either those of the age in which the pupils live or are closely related to it. It may, of

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course, be argued that a proper comprehension of the writers of one century depends as a rule upon something more than acquaintance with those of the preceding centuries. But it is equally correct to say that if our children are to understand the past, it will be through comprehension of the present. When the main outlines of the environmental language and style are grasped, the apparently contradictory theory can come into play, namely, that there is no proper knowledge of the present without a study of the past.

There is no need, however, to rest the argument upon these general and contested grounds. For after all, it still remains a question as to when to use each of these principles. There is a stronger and more convincing reason, already hinted at. The training in literature must be specific. If I am to entertain any hope that my pupils will after school life read because they enjoy the best of *modern* literature which they will meet on every hand, then the seeds of this specific appreciation must be sown in the school. For this reason, modern writers must be more extensively handled in the school. The reading of Chaucer, Spenser, Milton, Pope, and Gray, or perhaps Shakespeare and Wordsworth, even if the children are educated to love these writers (which does not always happen), will not necessarily lead to the appreciation of the great mass of modern literature from which they will be bound to select. The power to read *Paradise Lost* or Gray's *Elegy*, even when the result is appreciation, does not involve the power to appreciate *Lorna Doone* or *Adam*

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Bede. 'No models of past times, however perfect, can have the same vivid effect on the youthful mind, as the productions of contemporary genius.'[1]

It may be that there exists such a thing as a *general* enjoyment and love of literature that embraces all and every type. If there is, it is built up upon an immense amount and variety of reading. Certainly children of fourteen cannot be expected to reach this stage. The adult whose taste is formed may assert that he who reads and appreciates even one great author has a standard which enables him to measure the merits of other writers; or has, at any rate, gained the power of enjoying them. Two things may be urged against this view. First, the person who makes the assertion cannot possibly judge of the effects of such a narrow literary study, since his own general power of enjoyment is not the outcome of a reading confined to one author, but of the broadest and most catholic selection from the great literature of the world. Second, the very appreciation of a particular writer's works develops and becomes strong only in and through the fact that the works of other writers have formed a kind of training ground. Now the child is in a very different position. He has neither the wide power of appreciation nor the wide reading without which it can never be acquired. He, at least, will not attain *general* appreciation. But this is hardly to be regretted, since what he chiefly needs is the power to enjoy the best of nineteenth- and twentieth-

[1] S. T. Coleridge, *Biographia Literaria* (Everyman's Library, p. 5).

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century literature; for this must form the bulk of his future reading. It will therefore be necessary to train him on specific lines, that is, upon *modern* literature; since this is the concrete material which is to extend his comprehension of the life going on around him and his enjoyment of reading. He should therefore *in the school* make first-hand acquaintance with the best representative writings of the moderns.

The fact that all great literature—ancient, mediaeval, and modern, is universal in its appeal, cannot be used as antagonistic to this view; for this universality of appeal is conditioned by a certain general intelligibility of the matter and familiarity of language and style. It might seem almost unnecessary to assert this, were it not that educational writers and others find pleasure in the paradox that a child should read and memorize a great deal of poetry, although he may not understand it. Age will bring comprehension, we are told, and nothing is lost. As sufficient answer to this common but erroneous view we note that the report to which we have referred expresses its astonishment and pleasure at finding such 'an unexpected wealth of poetry for children, some of really classical rank.'[1] There is no doubt whatever that the amount of worthy literature which is assimilable by children of school age, is commensurate not only with their powers of memorizing, but also with the time which can in the school be applied to reading. And as we have seen, the greater part of this should be modern.

[1] *Report on the Teaching of English*, p. 31.

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Far too little of modern writers is seen by the primary school child, and with less excuse by the secondary school child up to the age of fourteen. With less excuse, because, unlike the former, it has opportunities of continuing the literature course after that age. This blind use of the old in preference to the new would be only intelligible on two conditions—that matter and style were more within the child's comprehension, and that the theory of formal discipline was still firmly based. It is because we must deny the truth of both statements that we recommend a considerably wider use of later literary work. The 'Continuous Readers' and the historical novels are therefore of the very highest importance—of greater value to the children than Shakespeare.

A great deal of what has just been said has a distinct reference to the reading of Shakespeare in the schools. So great a place does the name of Shakespeare hold in the minds of the cultured and in the superstitions of the uncultured that no child is regarded as orthodox until he has been through at least some kind of ceremony connected with that great name. It may be that he can relate with more or less pain to himself and us the story of the *Tempest*, or the death of Caesar; or better, he may have memorized 'The quality of mercy is not strained', and so on with various degrees of initiation up to the reading and elementary study of the whole of several plays. Some of this is the sheerest nonsense; some of it, we think, is founded upon imperfect knowledge of the child and of pedagogic theory.

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There seems no sufficient reason why the stories of the plays should be told to children before they are able to read Shakespeare's own words. The plots are not the immortal parts. It is a waste of time to study the plots without Shakespeare. The fact is that Shakespeare is too difficult for most children under the age of thirteen; and although it is true with regard to all developing minds, that meaning and admiration increase with years, it is equally true that to induce re-reading, the first perusal must at least convey a certain variable minimum of meaning. But when for the child whole pages are complete riddles, we cannot say that he is in the position of the adult who is gradually augmenting his comprehension. This too early introduction of Shakespeare has all the evil effects which Professor James attributed to the too early introduction of philosophy. Such reading will never create appreciation of Shakespeare. 'Though the plays are the greatest things ever made by the English mind, it cannot be said that the English reverence their poet.'[1] Certainly not because Shakespeare is inadequately represented in the schools, but very probably because he is too much there. The masses of the people never visit the Shakespearian playhouse; they probably have too vivid a recollection of early puzzledom. A sane pedagogy suggests that we should defer any introduction to Shakespeare until the pupil is about thirteen years old, and then begin with the reading of careful selections and songs, putting these in their setting in

[1] John Masefield, *Shakespeare*, Introduction, p. v.

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a sketch of the play given in a simple prose rendering or orally. Between 13 and 14 years of age one of the simpler plays suggested in the Report[1] might be read, and selected scenes dramatized. This is all that the primary schools should as a rule attempt with regard to Shakespeare. Something will, of course, depend upon the type of school and the presence of a specially interested teacher. In the latter case there is danger of placing too great stress upon Shakespeare, and of losing the proper balance; of applying the principle of formal training to the study of literature. The special work which some schools do in this and in other directions should always be investigated from the wider point of view, and frequently it is to be feared will have to serve as a warning rather than an incentive to others. Personal initiative and endeavour are vital in school work, but it is possible to augment their value by the retention of proportion. Throughout the whole of school life the name of Shakespeare should be mentioned with respect and veneration, reference and quotation constantly employed, and the hope of one day reading him held out as a consummation of all previous reading. This only apparent depreciation of the aims of the primary school is a pedagogic essential if we are to attain proportion and harmony, and as we have argued, if we are to secure any proper assimilation.

There must be, if the principle of formal training *is* a dead letter, considerable latitude allowed to children

[1] *Report*, p. 56.

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in choosing what they will read. We are not pleading for a cast-iron curriculum to be used by all pupils in all schools, nor can we go as far as Tolstoi and Wells in their well-intentioned *laissez faire* policy. If a generous supply of the best literature is provided, we shall afford the pupil very frequent opportunities for reading what he wishes. If, however, the teacher has any literary gift of feeling and expression, then by his own viva voce reading and occasional systematized and inspiring conversations, in which he seeks to open the children's eyes to undiscovered beauties in matter they would never have read for themselves, he may lay the stable foundations of certain forms of appreciation. If this were a method treatise we would urge the greatest moderation in that process known as dissection, whether post-mortem, as it is most likely to be, or vivisection. There is little doubt that in this matter only the hand of the expert is useful; any clumsy performance may prove fatal to the tender germs of appreciation.

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CHAPTER XII

FUNDAMENTALS OF METHOD—NATURE-STUDY

In the account we have given of the doctrine of specific values and concepts of method, one fact has become obvious, namely, that in order to extract training or discipline from any school subject we must not trust solely to any inherent quality of the subject itself, but must definitely aim at this training. Only by directing all our energies to this point, by employing every device of method in accordance with psychological principles, can we hope to extend the range of the concepts acquired in any one subject to others. At the best the work of the primary school will be naturally characterized by incompleteness, since at fourteen the child's mind must always be immature. For specific habits we can do something; upon punctuality, cleanliness, and obedience within the school limits we can perhaps insist; but to develop apprehension of the general notions underlying those habits and others in such a way that their range of application is at all wide, *hic labor, hoc opus est.*

In earlier chapters we have attempted to deduce from the results of our experimental investigations the theory of the general method which must be employed in order to bring about the formation of the concepts of method and the ideals derivable from the various

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school subjects. In order to give to the views previously put forward the clearness necessary to their fuller comprehension, and the concreteness which is also necessary to a common-sense application of them, we shall select one of the branches of the curriculum and venture to make a few suggestions as to the special methods of dealing with it.

The present chapter consists of some practical suggestions by means of which and in accordance with the view of specific discipline propounded, the teacher may seek to inspire a love of Nature. Nature-study being almost a new subject in the school and the range of work possible in this subject being necessarily small in comparison with the multiplicity and complexity of Nature herself, it may be useful to indicate by what means some success in broadening the child's outlook and deepening his appreciation may be obtained. Moreover, as in previous chapters the writer has insisted strongly upon the leisure side of school life, and upon the necessity of developing in the child some appreciation of literature, art, and Nature, the very reasonable demand may be made that some more concrete account should be given of the way in which one at least of the branches of leisure studies should be treated, in order to bring about this somewhat vague and indefinable mental condition known as appreciation.

When a new subject-matter is placed in the curriculum, some, and often many years elapse before a really sane view is taken of it. Its importance is probably at first over-estimated, since its entrance into

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the school is generally the work of a few enthusiasts who expect through it the educational millennium. The history of the last twenty years is full of the record of these exhausted enthusiasms. Sometimes the intrinsic value of the subject is at first misconceived. It may be regarded as belonging entirely to the sphere of school *work*, when its place is equally real among the *leisure* pursuits. It was a mistake of this kind that marred the earlier attempts to teach drawing in the primary school. Sometimes too, and indeed usually, it takes years of experience with the new subject before principles of method are evolved. New subjects are as a rule taught badly. In the case of 'nature-study', therefore, it may be a useful inquiry to seek to discover its right position in the curriculum, its intrinsic value, and the natural methods of presenting it. We shall attempt a very brief examination of these important points.

The introduction of nature-study into the school marks a stage in the development of the so-called teaching of science. Emphasis was previously laid upon the acquirement of knowledge—of facts and principles; the view of science as a means of *comprehending* the external world was the only one taken by teachers. With the advent of nature-study as a substitute for science, the emphasis was readjusted and appreciation or enjoyment came to be regarded as an aim worthy to take rank with that of comprehension of Nature. Literature had already passed through these stages; enjoyment of literature has for some time been regarded as a distinct aim of the school. In both

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literature and nature-study, then, we see in this view an important means of avoiding the narrowness that adheres to any single study. The specific character of any single subject and the narrowness of the training it affords are so marked that any broadening of the teacher's point of view will be of the highest value in augmenting the discipline derivable from the subject. To regard nature-study, therefore, as a means of developing not only comprehension but also enjoyment of Nature, is a step from darkness to light, from the narrowly specific actualities of training to possibilities of its generalizing functions.

The teacher is often so industriously engaged in seeking to develop acuteness and precision of observation, in giving fictitious 'brain-stretching discipline', and in getting the full practical values out of the subject that the appreciative or enjoyment side naturally tends to fall into the background. Nature-study, with every other subject of the curriculum, now that the imagined effects of mental gymnastics are no longer assumed, can be taught in such a way as to bring out its intrinsic values, and one of these is enjoyment —pleasure in the beauty of Nature. Thus, from a study of Nature, we may obtain some development of such a power as observation, so far as natural objects are concerned; if the teaching is of a really skilful kind, this power may become transferable to other branches of study; but if, in addition, the teaching is sympathetic and inspiring, the child may also learn to love the world of Nature.

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In a nature-study lesson we shall have to distinguish between several specific types of enjoyment which may or may not be present. There is, for example, that due to dealing with 'things', in which the pleasure arises from the mere use of the senses, in seeing, handling, smelling, or even tasting, as occurs, for example, in our old friend, the 'apple' lesson. Then there is also an enjoyment due to self-activity, mental and physical, of a less regulated, freer type than is permitted in other lessons. In addition there may be present a feeling of pleasure derived from novelty, at seeing the familiar although not fully comprehended object in an unusual environment, at finding the informal and real amid what the child usually considers the formal and unreal.

The appreciation we have in view is of course none of these. It is an aesthetic enjoyment, a pleasure in the beauty of the object, either purely sensuous, or arising from perception of the inner harmony of parts and of functions. As a rule the enjoyment arises from both sources. These specific types of enjoyment comprise narrower types such as what we roughly describe as a 'love of flowers', 'of trees', or 'of animals'; and these again still more specific types such as appreciation of roses or lilies, of fir or elm-trees. Such divisions of these may at first sight appear ridiculous; but a deeper examination will show that these forms are to be found in almost every case of the early stages of development. A child may find wonder and enjoyment in some objects of nature and none in others—in roses, but not in dandelions, in cedars but not in oak-trees, in horses but

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not in beetles. So narrow and compartmental is the range of child thought and conduct that one can very well conceive of a child leaving school with a deep interest in worms, caterpillars, and pond life, but none in the fields or trees or hills.

There is an interesting parallel existing between the study of literature and painting on the one hand, and Nature on the other. In literature there may be enjoyment *of the story*; the more unexpected or unusual the events described, the greater the pleasure; there is in addition enjoyment of the music of the words and of the author's style. Pictures, too, that depict events please the uninitiated most; but the beauty of form, colour and composition is the object of a different type of enjoyment. So in Nature; novelty, greatness, extreme smallness, anything exceptional or unusual, as for example, an orchid, a hot-house full of unusua flowers, or a snow-covered mountain—these excite wonder rather than true appreciation. But the teacher's aim is higher than merely to provide material for this kind of pleasure. His aim is to give the power of seeing the beauty of and enjoying the commonplace; the necessity of appealing to striking or unusual phenomena will diminish in proportion as the child's aesthetic appreciation develops. The study of Nature may therefore, when properly conducted, tend to lead the child away from the narrow enjoyment of the merely curious and awe-inspiring to an appreciation as wide as the vast field of the so-called commonplace.

Just, however, as the sentiment at first felt for a

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person and for what we conceive to be his or her striking qualities may ripen into a love that makes beautiful the commonplace of everyday life, so may the sentiment of wonder at the unusual in Nature pass gradually into the higher love of the commoner forms and processes of Nature. Moreover, just as a deeper study of the composition and construction of a literary or artistic masterpiece is almost certain to increase our enjoyment of it, so a study of the structure and functions of natural objects will generally enlarge our powers of appreciating them.

A little child begins with a sensuous love, particularly of colour; through nature-study we hope to see growing in him a wonder and awe at the marvellous harmony between structure and function. At the same time he cannot afford to surrender the early enjoyment gained through the eyes and hands. The two specific types of pleasure should grow together, interpenetrating each other.

It may be that in nature-study work we miss some of the nearer beauty of form and colour through the absorption of our attention in the study of minute structure and hidden function. So different are these two forms of enjoyment that we have to face the fact that the child may study the processes of Nature without attaining sensuous appreciation. 'Without original sensibility or education', says Coleridge, 'the ancient mountains, with all their terrors and all their glories, are pictures to the blind and music to the deaf.' We may go further and assert that it is possible by

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a study of Nature to diminish or even to destroy enjoyment. The method of treatment is everything. We are in this matter constantly skating upon thin ice and incurring all sorts of risks. Some of our most graceful curves and figures bring us very near to an immersion which would take the children with us. In other words, an excess of zeal and even special knowledge on our part may prove disastrous to our pupils.

To sum up, then—we note that the forms of appreciation are very numerous and there is danger that the child's development may be confined to only one or but few of them. Our object is, therefore, to make use of the new view of training by using as many specific forms of enjoyment as possible for the purpose of inducing more general types of aesthetic appreciation, which will include not only the concrete types dealt with, but others related to them. By this means alone can we ever reach that general response to Nature known as the 'enjoyment of beauty'.

How, then, shall we approach this special problem so as to afford the greatest possible opportunity for the development of a general love of Nature? It will perhaps be sufficient to indicate the means which are less usually practised, since we may assume that the more usual are well known and generally adopted.

1. There is considerable danger of attempting to over-develop the intellectual side of the study. We often expect too deep an analysis and understanding of principles. Nature-study might be regarded as a return to a sane selection of material in accordance with

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canons laid down in this book, were it not for the less sane use often made of the child's powers of conception. These, as we have previously pointed out, often lag far behind the unfounded expectations and hopes of some teachers. Too frequently a new subject is regarded as competing with other subjects, in the sense that it is expected to show almost exactly similar training effects ; an unhappy attempt is made to rival the specific training of such subjects as mathematics or science or literature in inculcating 'accuracy', 'the reasoning power', and other abilities supposed to be of general application. It is thought that only by such methods can its right to a place in the plan of studies be vindicated. Hence we get a repetition of the old error—that of sacrificing width to apparent depth, typical material to an imaginary understanding of principles. Nothing can be more mischievous or destructive in its effect upon any specific form of appreciation than this severe demand upon the powers of comprehension. Nature-study has aims of an entirely different kind. It consists chiefly in contact with, and observation of Nature herself ; and what little understanding of principles can be reached in the primary school should neither be built upon too few facts, nor have any tendency to destroy the enjoyment of natural beauty.

2. The same kind of error is often apparent in a finicking dilly-dallying called 'thoroughness'. The child's powers of observation can easily be strained and paralysed by insisting on detail. A whole lesson

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devoted to the exposition of the true and only method of planting a bean can hardly appeal to common sense. Without such 'knowledge', one may plant fifty beans in the same time, and not only learn something of Nature, but enjoy as a result many a pleasant meal. The mania for acute and precise observation is another relic of that fecund error we have been seeking to expose. This kind of work is unfortunately undertaken for the purpose of training the 'faculty of observation', with what results we have sought to show.

3. The attempt to make use of 'scientific procedure' is again responsible for the same kind of mistake. The teacher who makes a child examine the root before the stem and the stem before the flower, is evidently teaching him something he ought not to know. It is very necessary to recollect that we are here not engaged in teaching a science (and even then the procedure should be anything but logical in the sense of following the order of structural development); our business is to give the children a working acquaintance with Nature, in which 'the lore of shepherd and farmer' immeasurably outweighs the value of such scientific conceptions as are possible to the children of our primary schools.

4. A knowledge and appreciation of the specific forms of the natural *environment* is of the first importance. The interest and wonder we wish to excite must be found in this environment and not in adventitious and distracting 'aids'. Our attitude to Nature is, for example, entirely different from that of primitive man, particularly so far as concerns appreciation. Some

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recent attempts have been made to lead the child by the stages through which the human race may be supposed to have passed in its upward progress. Walnuts, for instance, are examined with the eyes of primitive man, and much time is wasted in the search for means to open them, and then to ascertain whether they are edible or poisonous. We do not need, however, to pass through these simian stages in order to love or even to understand Nature. Primitive man did not love Nature; neither did he wonder at natural phenomena unless they were awe-inspiring or terrifying. These are narrow specific forms of wonder on which we have no need to dwell. Only by bringing the child into contact with widely diverse forms of Nature can we hope to widen his interest and appreciation; and by spending time over primitive man we are dealing with material which is neither part of our aim nor a help in advancing it.

5. Wherever it is possible to introduce into the field of complex and diverse Nature a common element, we shall have at once a factor which promotes the possibility of making the appreciation more general. Such a factor we have in the general attitude of the teacher to all aspects of Nature. This has been beautifully expressed by Tennyson in the well-known lines:

> 'Flower in the crannied wall,
> I pluck you out of the crannies,
> I hold you here, root and all, in my hand,
> Little flower—but *if* I could understand
> What you are, root and all, and all in all,
> I should know what God and man is.'

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The child's narrow view is sometimes evidenced in the spirit which expresses itself in: 'I know all about roots' or 'I've done buds'; the teacher's broader view in a confession of incomplete knowledge, in the admission that description of the most thorough kind is not explanation. His manner towards arithmetic or grammar will be quite different; there will be an atmosphere peculiar to nature-study which may do much to unify the child's more specific conceptions and forms of enjoyment.

6. To avoid the narrowing tendencies of a study which involves frequent attention to details and parts which have little meaning apart from the wholes to which they belong, it will be necessary occasionally to deal with these wholes. A series of lessons upon 'buds' may produce an aesthetic enjoyment of their beauty; but this will become all the greater if the series is interrupted by taking the child to see the various kinds of buds *upon the trees*. We have only to think of the effect of the view of a whole field of buttercups after a minute study of a specimen to see the value of such a procedure. The twig lying upon the school desk becomes an immeasurably more beautiful object when replaced even in imagination upon the forest tree. One of the features of our teaching will therefore be to lead the child to see as Wordsworth saw:

'the parts
As parts, but with a feeling of the whole.'

In this way we shall do valuable work in avoiding a narrow conception and enjoyment of Nature; the

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specific forms of these will then be performing their function as necessary steps in the process of generalization.

So far we have noted some of the natural and direct methods of diminishing the specific and augmenting the generalizing tendencies in appreciation of Nature. There are others less direct but which are hardly less necessary. Correlation, when scientifically used, affords not only fresh points of view but also possibilities of reaching concepts of a more general kind. We have already seen that while some subjects, as, for example, history and geography or science and mathematics, can quite properly be regarded as capable of correlation in that they are natural and inseparable parts of the same subject-matter, other subjects can only be looked upon as *methods* for acquiring certain knowledge or ability. Of this class is drawing, looked on in relation to history or nature-study. Moreover, of the latter type some are indirect and non-natural methods, as is the case when drawing is made the preparatory step in woodwork or needlework; others are direct, natural or spontaneous methods of acquiring certain kinds of knowledge, as is the case in the relation between drawing and nature-study or literature with reference to the same subject. There is little doubt that drawing and literature and even the study of pictures should be used in the school for the purpose of giving width to the concepts of nature-study as well as to the range of appreciation. Like all methods they must be scientifically used; otherwise they lose this vivifying and developing power.

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In what way may drawing from Nature be said to do this? Let us take an example. A child sees a flower and is indifferent to it. He is encouraged to examine it and in doing this becomes interested, wondering perhaps at its beauty and the harmony of the parts. We continue to encourage him in the search for more and more details until at length he becomes bored. Now in imagination recalling this retrograde third step and returning to the stage of interest and wonder, we set the child to draw the flower. The motor-reaction makes the points observed more definite and increases his comprehension; it emphasizes the impression, increasing interest and wonder. Moreover, the feebleness of his own production compared with the wonderful reality tends to deepen his admiration. But something else takes place. So long as he is not overburdened with details or with conceptions beyond his power, the flower has for him a *unity* and a meaning which by means of a sketch he can strive to express. He reads his own meaning into the sketch, which becomes in this way a piece of *self*-expression. The blending of the 'self' and the object must increase his power of appreciation; for we find in this process the universalizing element which will render the specific concepts and ideals pertaining to the subject more capable of application to wider spheres. When the pupil has put *himself* into the flower in this way he has taken a step towards unifying in his own feeling the whole of Nature.

No mere slavish imitation can augment appreciation.

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It is owing to this fact that the drawing of the nature-study lesson *may* be destructive of aesthetic feeling. The exactitude sometimes demanded is unnatural; the sketch becomes not an impression, or an expression of feeling, but an inventory, a diagram. I have seen children drawing bud-stalks and daisies with a meticulous precision nothing short of mathematical. They might as well be engaged in drawing a plain deal door as a flower. By such means the child destroys his chance of enjoying even a small corner of reality. How is this result of our teaching to be avoided?

Opportunities for a freer impressionist type of drawing should be given. When a child, in criticizing another's sketch of a bird, describes it as too proud, humble, sad or tired, it is clear that he himself is an impressionist and not a copyist. This 'feeling' of the meaning must be encouraged as a substitute for measuring. The occasional sketching of wholes should be introduced, thus securing the omission of many details—a bud, a bud-stalk, a branch, a tree, and even a wood. The drawing of the larger characteristic lines is a relief; it means a broader point of view, a larger perspective and consequently a larger enjoyment. I would allow the pupils sometimes to choose their own subjects and the older children their own media of expression.

Special emphasis should be placed upon the broad characteristics as opposed to minute details. Get the characteristic lines first, by placing the object at some little distance. Then alternate; sometimes bringing

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the object near, sometimes placing it at a distance. And at first the most observant children should sit *furthest* from the object. If the latter is small and the characteristic lines therefore difficult, as would be the case in sketching, for example, a mouse, the aesthetic value of the exercise becomes practically negligible. It may be useful as a form of revision, but appears to oppose the growth of appreciation. The difficulty should be avoided by deferring it.

Memory drawing is an invaluable aid to appreciation. As the mind is then undistracted by reality and its details, the fullest use may be made of the powers of self-expression. Variety is also essential. In the school the power of imagination must not be imprisoned or over-specialized; for our ideal is to make the appreciation of Nature as wide ultimately as Nature herself. Quickness of execution is another essential. Rapid sketches are more likely to give rise to the sense of beauty than the excessive care which involves detail, slowness, and monotony. All these methods tend to make the school work more truly representative of life. The matter and the method being thus typical, the way is opened to wide concepts. Especially do the characteristics we have emphasized allow of a very wide range of material, and it is largely through this fact that it is possible for the dawning appreciation to become many-sided and wide.

Let us now turn for a moment to a consideration of the influence of great pictures. Appreciation of works

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of art representing Nature in varying forms and moods often leads to the love of Nature herself or increases an already existing affection. An interest so closely allied as this is with a love of Nature should not be neglected. Similar emotions seem to be evoked through a slightly different type of object, so that here again we have a species of correlation which may become of vast importance to the growth of wide concepts and ideals. Beauty of whatever kind is ultimately one, and enjoyment of beauty of such intimate relation as that of Nature and represented Nature must necessarily be the stepping-stone to a general conception of beauty. Here we are once more engaged in breaking down the barriers, which the mind is too prone to set up, between ideas whose relationship remains hidden. Here we begin to get perspectives of beauty hitherto closed.

A good picture contains a *unity* which it is more difficult to find in Nature; the disturbing influence of a wealth of details is avoided; the eye is led by the artist's skill in composition easily and pleasantly to the central point; and above all the painter has given his own meaning to the scene, he has interpreted Nature. Whatever the reason, the effect of such art upon the child is often very great. Fra Lippo Lippi does not even seek to explain this effect, but contents himself with the assertion that:

> 'we're made so that we love
> First when we see them painted, things we have passed
> Perhaps a hundred times nor cared to see.'

If this is true, it cannot be considered absurd to urge

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that children should be trained to comprehend and love good pictures. The teacher who admires them and has some gift of interpretation should occasionally study one with his pupils, helping them to interpret it within the limits of their comprehension and to enter feelingly into the beauty depicted.

Some years ago the writer had the privilege of hearing a lesson given by the director of the Hamburg Art Gallery upon a painting to a class of children between fourteen and fifteen years old. The picture did not represent what is here understood by Nature; but nevertheless, a short account of the method adopted may indicate general lines of procedure. The lesson ran as follows:

Professor. What is wanting in this picture which you see in nearly all?

Children. The title is wanting.

Professor. At the time when it was painted it was customary to omit the title. Only biblical pictures were painted, and all Catholic children knew on looking at a picture what it was about. Who painted it?

Children. An artist whose initials were M. S.

Professor. Quite right. The artist's name was Martin Schongauer. How many of you have heard the name before? No one? Tell me the name of a great German painter.

(One girl had heard the name Albrecht Dürer.)

Professor. Tell me the name of a great Italian painter.

Children. Raphael, Michael Angelo, Titian, &c.

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Professor. Now tell me how it is you have heard of so many Italian and of no German painters.

Children. The Italian artists were better.

Professor. No! Schongauer and Albrecht Dürer were as great artists as those of Italy; but the German always admires what is foreign, and thinks it superior to his own. We shall see presently how in many respects Schongauer was a greater painter than Raphael. Dürer thought so highly of him that he wanted to apprentice himself to him. Now, let us look at the picture itself. Where is the figure of Christ?

Children. Christ is in the middle of the picture.

Professor. Where is he going?

Children. He is going to Golgotha.

Professor. What kind of a road is it?

Children. The road is uphill, rough.

Professor. What moment of the journey has the artist chosen to paint?

Children. The artist has chosen the moment when Christ falls.

(I omit here the questions leading to a correct understanding of the position of the kneeling central figure.)

Professor. What do you notice about the crowd in front?

Children. It has gone on.

Professor. And the crowd behind?

Children. They have crowded close up to the cross on account of the sudden stoppage.

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Professor. There are, then, three groups in the picture. What are they?

Children. The crowd in front, Christ and the men around Him, and the people behind.

Professor. Let us look at the men around Christ. The man on the left—what is he doing?

Children. He has a rope and is about to strike Christ.

Professor. In which hand is the rope?

Children. He has the rope in his right hand.

Professor. With what is the other occupied?

Children. The left hand is occupied in holding the coil of rope.

Professor. On which foot is the weight of the body resting?

Children. The weight of the body is resting on the right foot.

Professor. What do you know from his manner of standing?

Children. 1. That he has just come.
2. That he has run up.
3. That he has sprung forward.

Professor. What leads you to think that?

Children. 1. His legs are bent as if he is running.
2. His coat is fluttering behind him.

Professor. Quite right. This is the first time that an artist has shown a coat fluttering like this. Has he brought a rope for the purpose of striking Christ?

Children. No; he has brought a rope in order to tie Christ to the cross.

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Professor. What rank of man is he ?

Children. He is a poor man, a servant.

Professor. How do you know that ?

Children. 1. His clothes are poor.
2. His hat is ragged.

Professor. But what is lacking in his dress ?

Children. He has no collar, no mantle, &c.

(Here bashfulness prevented the children from answering until the correct answer was insisted on—He has no breeches !)

Professor. Look at his face. What is he doing ?

Children. He is talking.

Professor. Only talking ? Look at his mouth.

Children. He is abusing Christ.

Professor. Now look at the man on the other side. What is he doing ?

Children. He is walking straight on.

Professor. Why ?

Children. He has not noticed that Christ has fallen.

Professor. What kind of a face has he ?

Children. He has a stupid face.

Professor. It is just the typical face of the stupid man who goes through the world without seeing anything. Now let us look at the foremost party. . . .

The whole lesson was conducted in this interesting and interpretive way. It would be too long to give the whole; but one or two further points are of interest as showing that the aesthetic aim, and not merely observation, is always in view.

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A series of questions led the children to see the significance of the rider's attitude, of the hanging arm and the beautifully bent fingers, suggesting a mild form of sudden fear. No previous artists, not even the Italians, had ever attempted anything like it. The professor elicited how degrees of fear are shown by the extent to which the arm is raised until the face itself is shielded. The figure of one man with his hand stretched out and the face turned to the rear expressed so clearly the unspoken words 'I told you it would happen' that the class required but little questioning to arrive at this conclusion. Rather more difficult was the inference from the attitude of the rider talking to Pontius Pilate; but patience and skilful questioning at last brought out the fact that the position of the one hand with fingers pointing downwards suggested conviction, certainty; while the upturned hand and averted face of Pilate suggested lack of conviction. One child could give the key to Pilate's character in the words, 'What is truth?'

From such a detailed study the children derived fuller meaning and appreciation of a kind which was well within their powers of assimilation. It is possible to treat Nature pictures in a similar manner and to lead our pupils to a thorough enjoyment of them, and through them to a deeper and wider enjoyment of natural beauty.

Two or three visits each year of upper classes to a picture gallery, if adequate preparation were made,

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would be extremely valuable. In every gallery a room should be reserved for visiting classes; the teacher should have previously indicated the picture needed for study which would therefore be already taken down and transferred to an easel in the room, and the children, comfortably seated, would study it for an hour with the greatest interest.

Educational authorities would soon be able to exercise some influence for good in the promotion of artistic appreciation and taste, if they would provide reproductions of great paintings in such numbers for use in the school that every two or three children could work from one copy. A further useful work would be to see that these reproductions are cheap enough for children to buy. At present we scarcely aim higher than picture post-cards. By adopting such means the school may be brought into closer touch with the outside world; in this way we shall help to destroy the unreal divisions between school work and real life, by applying the knowledge gained in school to practical living. For the children this will mean an increase in fullness of life, with more of the highest enjoyment.

Another important aspect of this training process is found in the choice and use of school wall pictures. The whole subject is worth a careful study. With a large number of excellent pictures, there are some quite worthless, which ought at once to be removed; and in addition there are some which, while useful as occasional illustrations, should never be allowed to

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remain permanently upon the school walls to deprave the taste and depress the spirits of teacher and children. Among these must be included maps, diagrams of the parts of flowers, of coal mines and machines, illustrations of geographical and ethnographical divisions, and all those which are purely illustrative or explanatory. The cultivation of appreciation is so nearly a subconscious process that we can never tell what may be the effect of entirely artistic surroundings. Probably one day the school-room may become an important means of training in taste, and no longer an enemy to appreciation of beauty. In the meantime, where good pictures are insufficient in number, interchanges between class-rooms and schools would be useful. Only by adopting every legitimate pedagogical device and bringing the widest spheres of beauty within the reach of the child can we hope to cultivate a love of the beautiful.

We shall now in conclusion turn for a moment to consider the bearing of literature upon appreciation of Nature. We know that it cannot be a substitute for first-hand acquaintance with Nature, but there can be no doubt as to its supplementary value. It has been to many a revelation, the unlocking of the senses. As the connexion between literature and nature-study has been the subject of a considerable amount of recent writing, we shall confine the discussion within very narrow limits.

The word 'correlation', from its associations and

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misuse, has to many teachers a detestable connotation. We have been told to correlate literature and nature-study, and, with reservations, the advice should certainly be accepted. But if by this is meant that a poem or part of a poem is to be brought into the nature lesson as a regular thing, to illustrate the growth and habits of plants, seed distribution, or seasonal changes, as has been recently suggested, then we must disagree, and for several reasons :

First, there seems to be an incongruity in the use of a poem as an illustration or tool *in* a Nature lesson—as much incongruity as there would be if in a literature lesson upon Burns's lines :

> ' Wee, sleekit, cowrin', tim'rous beastie,
> Oh, what a panic 's in thy breastie,' . . .

the teacher should illustrate with a living mouse. And this, not because a mouse is an unworthy or ugly object, but because the presentation of a poem and of a mouse serve two distinct and opposing ends. In the one case we are occupied in understanding and in projecting our own meaning into the object, and in the other in understanding and feeling the impressions the object has made upon another and a master-mind.

Secondly, the suggestion is too obvious. It resembles too closely the drawing of the moral by the teacher instead of by the child ; it seems too much like the irritating process of explaining a joke. There is but little mental activity on the part of the child. If, however, it could be arranged that the child should happen

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upon the poem, as it were accidentally, on some occasion not too remote from the lesson, and find the application himself, the process would be invaluable. It would then come as an inward revelation accompanied by all the joy of spontaneity.

Lastly, in the nature-study lesson, the interest and wonder must arise from the object itself and not from a poem. When the two appear in such close proximity the result is to diminish the effect of each. Moreover, the appeal which the great poetry of Nature makes is greatest and perhaps only possible in the absence of the object, when the mind, steeped in solitude arising from the absence of the concrete world, can use to the full the softening, mysterious influences of memory.

It must never be forgotten that an expressive reading of a poem is likely to have a far greater aesthetic effect than a so-called thorough analysis. Except on rare occasions, we should avoid literary dissection. Dissection of a Nature poem is not necessarily a training in appreciation either of literature or of Nature, and is only a bastard kind of botany.

In conclusion, it is of great moment that we should not expect too much of the children. The hopes of cultivating in them a highly developed love of beauty are doomed to disappointment. All the rich acquirements of the human race have had to be fought for; every step in progress has needed ages of effort. The new view of formal training will make us less sanguine of easy, but more certain of final, conquest. Wordsworth describes the growth of the love of Nature in

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himself as taking place in three stages. In the first, he says, Nature was

> 'But secondary to my own pursuits
> And animal activities, and all
> Their trivial pleasures.'

Of the second stage he says:

> 'I cannot paint
> What then I was. The sounding cataract
> Haunted me like a passion: the tall rock,
> The mountain, and the deep and gloomy wood,
> Their colours and their forms, were then to me
> An appetite; a feeling and a love,
> That had no need of a remoter charm
> By thought supplied, or any interest
> Unborrowed from the eye.'

And finally, in the words of Professor Raleigh, 'the love of Nature returned to him, but shorn of its old despotism; it was subdued to a dominant scheme of thought and became fellow inmate in his mind with the love of man and with a deep sense of the pathos of things.'

If we can succeed in introducing the child to the first of these, the work will have been well rewarded. To give the child the merest glimpse of the others would have effects which it is impossible to conceive.

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